

**United States Department of the Interior**

**Bureau of Land Management**

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**Environmental Assessment  
DOI-BLM-CO-N05-2016-0044-EA**

***Travel and Transportation Management  
Resource Management Plan Amendment for the WRFO***

***Draft RMPA/EA  
Public Review***

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U.S. Department of the Interior  
Bureau of Land Management  
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# 1. INTRODUCTION

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## 1.1. Identifying Information

**Project Title:** Travel and Transportation Management Resource Management Plan Amendment for the White River Field Office

**NEPA Document Number:** DOI-BLM-CO-N05-2016-0044-EA

## 1.2. Planning Area

The White River Field Office (WRFO) boundary includes approximately 2.7 million acres of BLM, National Park Service (NPS), U.S. Forest Service (FS), state, and private lands located in northwestern Colorado. Within this area, the BLM administers approximately 1.5 million surface acres and 2.2 million acres of federal oil and gas minerals (subsurface) estate. The Planning Area for this planning effort includes only the 1.5 million surface acres; management decisions made as a result of this planning process would apply only to BLM-administered surface acres and would not apply to State Highways or County Roads.

## 1.3. Background

### ***1.3.1. Overall Strategy for Travel Management Planning in the WRFO***

There are two levels of decision making in travel management planning. Designation of off-highway vehicle (OHV) areas as “open”, “limited”, or “closed” are land use planning decisions. The designation of individual roads, primitive roads, and trails are implementation decisions tiered to a Resource Management Plan (RMP). The WRFO’s travel management planning strategy is to conduct land use planning and implementation planning as separate steps.

Once the WRFO has updated the travel management decisions in the RMP, we would begin implementation planning. The White River Field Office would be broken down into Travel Management Areas (TMAs) that are approximately 150,000 to 300,000 acres in size. The TMAs are optional planning tools that allow field offices to address specific uses and resource concerns as well as to prioritize travel planning efforts. The WRFO would develop a Travel Management Plan (TMP) for each TMA; this is likely to result in 4-10 separate TMPs that cover the entire WRFO.

### ***1.3.2. Existing Travel Management Decisions in the RMP***

The 1997 RMP provided what was intended to be interim management guidance until a comprehensive travel management plan could be completed. The WRFO proposes to update the off-highway vehicle (OHV) area designations and criteria for granting exceptions to off-route travel found in the RMP through a plan amendment. The BLM’s planning regulations require evaluation of the land use plan, and potential revision or amendment, if there are new data, policies, or a change in circumstances that may necessitate changes to the terms, conditions, and

decisions of the plan (43 CFR 1610.5-5). The existing travel management decisions within the RMP can be confusing since they are not structured using current BLM travel management planning guidance (which was updated in 2012). There are also decisions in the RMP that conflict with BLM policy and do not account for changes in circumstances, such as increased management attention on greater sage-grouse and lands with wilderness characteristics. By completing a single plan amendment across the entire WRFO (rather than as necessary within individual Travel Management Areas), the BLM would be able to demonstrate trade-offs on a landscape scale when identifying which areas to prioritize for resource use or protection.

## **1.4. Purpose and Need for Action**

The purpose of WRFO's Travel and Transportation Management Resource Management Plan Amendment (hereafter, Travel Management RMPA) is to ensure that public lands are managed according to the principles of multiple use and sustained yield identified in the Federal Land Policy and Management Act of 1976 (FLPMA) while maintaining the valid existing rights and other obligations already established.

The need for the action is that the existing travel management decisions within the RMP are no longer adequate because they are inconsistent with current BLM travel management planning guidance (i.e., Travel and Transportation Manual 1626 and Travel and Transportation Management Handbook H-8342-1, CO-IM-2007-20) and do not account for changes in circumstances since the 1997 RMP was completed.

## **1.5. Decision to be Made**

Based on the analysis contained in this EA, the BLM would decide whether or not to amend the travel and transportation management direction in the 1997 White River Record of Decision and Approved Resource Management Plan, as amended. Under the National Environmental Policy Act (NEPA), the BLM must determine if there are any significant environmental impacts associated with the Proposed Action warranting further analysis in an Environmental Impact Statement (EIS). The State Director is the responsible officer who would decide one of the following:

- To amend all or portions of the travel management decisions in the RMP;
- To analyze the effects of a change in management direction in an EIS; or
- Not to amend any of the travel management direction in the RMP.

# **2. THE PLANNING PROCESS**

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## **2.1. Guidance to Be Provided in the Travel Management RMPA**

1. The BLM would define the long term management goals for the transportation system.
2. All public lands within the planning area would be designated as open, limited, or closed to off-route vehicle use, mechanized use, and/or non-motorized use.

3. The BLM would determine if there are any areas where non-motorized access (including mechanized and non-mechanized use) should be limited to designated routes or be subject to some other limitation on use.
4. The BLM would determine under what circumstances exceptions could be granted for specific roads, primitive roads, or trails within closed or limited areas.
5. The BLM would provide guidance on emergency closures and temporary closures needed to protect public health and safety or to prevent undue and unnecessary resource degradation due to unforeseen circumstances.
6. The BLM would define interim management objectives and identify the process of moving from an interim designation of “limited to existing roads, primitive roads, and trails” to a designation of “limited to designated roads primitive roads and trails” upon completion of TMPs.
7. A process would be identified to evaluate “existing routes” not identified in the inventory (and thus not considered in this plan).

## **2.2. Guidance to Be Provided During Subsequent Implementation Planning**

1. The BLM would identify, evaluate, and select specific routes available for motorized and non-motorized uses within the areas designated as “limited”. Route specific objectives would be identified and the BLM would specify limitations or restrictions on type, duration, season of uses, or modes of transportation allowed.
2. Once a system of designated roads, primitive roads, and trails has been identified, a map would be produced to communicate to travel network users which routes are available for motorized use and any conditions on that use. The map should also identify non-motorized trail opportunities and associated access points such as trailheads and parking areas.
3. To communicate the travel management plan to travel network users, the BLM would develop a sign plan, an education plan, and a monitoring plan.
4. In coordination with BLM law enforcement staff, and to the extent practicable, with state and local law enforcement agencies, the BLM would develop an enforcement plan.
5. The BLM would issue needed easements and rights-of-way (ROWs) to the BLM or others, to maintain the existing road, primitive road, and trail network providing public land access.
6. The BLM would also establish maintenance intensities for all roads, primitive roads, and trails.
7. Any transportation linear features that are not identified as part of the designated travel network would be included in a rehabilitation plan for decommissioning and rehabilitating closed or unauthorized routes.

8. Adaptive management language would be included to address how routes may be modified within the transportation network in the future.
9. In addition to the designation criteria identified in 43 CFR 8342.1, additional criteria would be developed to:
  - a. select or reject specific roads, primitive roads, and trails in the final travel management network;
  - b. add or construct new roads, primitive roads, or trails to the travel management network; and
  - c. specify limitations.

## **2.3. Planning Criteria**

1. The RMPA will be limited to making land use planning decisions specific to transportation and travel management.
2. The BLM will designate all public lands within the planning area as open, limited, or closed to off-route vehicle use, mechanized use, and/or non-motorized use.
3. Lands addressed in the RMPA will be surface lands managed by the BLM and will not include split-estate lands (that is, private surface with Federal mineral estate).
4. The RMP Amendment, if approved, will comply with FLPMA, the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations at 40 CFR 1500-1508, Department of the Interior regulations at 43 CFR 46 and 43 CFR 1600, the BLM Land Use Planning Handbook (H-1601-1), the BLM NEPA Handbook (H-1790-1), the BLM Travel and Transportation Management Handbook (H-8342-1), and all other applicable BLM policies and guidance.
5. Land use decisions in greater sage-grouse habitat considered in the RMPA will be consistent with land use decisions in the Northwest Colorado Greater Sage-Grouse Resource Management Plan Amendment.
6. The RMPA will recognize valid existing rights.
7. The BLM will use a collaborative approach to planning.
8. The BLM will consult with Indian tribes to identify sites, areas and objectives important to their cultural and religious heritage.
9. The BLM will coordinate and communicate with state, local and tribal governments to ensure the BLM considers provisions of pertinent plans; seek to resolve inconsistencies between state, local and tribal plans; and provide ample opportunities for state, local and tribal governments to comment on the development of the amendment.
10. The BLM will address socioeconomic and Environmental Justice impacts of the alternatives.

11. Land use allocations made for Wilderness Study Areas (WSA) must be consistent with the BLM Management of WSA manual (BLM Manual 6330) and with other laws, regulations and policies related to WSA management.
12. The BLM will not consider creating any new special designations, such as Areas of Critical Environmental Concern, through this RMPA.
13. The BLM will conduct implementation (route-by-route) travel management planning in a separate effort subsequent to completing this RMPA.
14. The BLM will develop a Programmatic Agreement with the Advisory Council on Historic Preservation and the Colorado State Historic Preservation Officer that identifies stipulations necessary to satisfy the BLM's responsibilities under Section 106 of the National Historic Preservation Act for both the RMPA as well as subsequent implementation travel management planning.
15. The BLM will provide the public with spatial data that depicts the alternatives (such as geographic information system (GIS) shapefiles or GoogleEarth KMZ files).
16. The BLM will consider existing travel management designations from adjacent jurisdictions (for example, other BLM offices, White River National Forest, Dinosaur National Monument) and strive for consistent management, as appropriate given consideration to resource values within the WRFO.

### **3. PROPOSED ACTION AND ALTERNATIVES**

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The BLM makes travel management decisions at both the land use planning level and the implementation level and these two different levels of decision-making are subject to different administrative remedies (protest or appeals processes). Most of the proposed changes analyzed in this document are land use plan decisions; these are summarized in Section 3.1 and presented in detail in Appendix B, Section B.2.

Implementation decisions are being proposed for the location of parking areas and fences for the open areas and also for the routes that connect the rock slabs in the Rangely Rock Crawling Park. These are described in Appendix G.

Maps illustrating proposed decisions can be found in Appendix C. Alternatives that were considered by the BLM but not carried forward for detailed analysis are listed in Section 3.2.

The BLM is currently evaluating a proposed land exchange in which the BLM may acquire parcels in Indian Valley and Smith Gulch. A contingency plan for how the BLM would manage travel on these parcels is presented in Appendix D.

## 3.1. Summary of Alternatives

### 3.1.1. *Alternative A (No Action)*

Under Alternative A (No Action Alternative), the BLM would not further amend any of the travel management decisions in the 1997 RMP prior to beginning implementation planning. Existing travel management decisions include those associated with the Pike Ridge and Buford closures (Federal Register Volume 59, Number 247), 2004 Wilson Creek Transportation Plan Amendment, 2015 Oil and Gas Development RMP Amendment, and the 2015 Northwest Colorado Greater Sage-Grouse RMP Amendment.

Under Alternative A, the six Wilderness Study Areas, Moosehead Mountain, Oak Ridge State Wildlife Area (SWA), and Pike Ridge are closed to motorized travel. Most of the rest of the field office is limited to existing routes (either year-round or seasonally) with most of the ACECs (except for East Douglas Creek ACEC) and Canyon Pintado National Historic District being limited to designated routes. Timber Gulch/Hay Gulch and Cow Creek are seasonally closed from 8/15 to 11/30 to provide for non-motorized hunting opportunities.

Alternative A allows for hunters to use motorized vehicles off-route (any distance) to retrieve downed big game and the general public to use motorized vehicles to travel up to 300 ft from an existing route to park, camp, or gather firewood and hunters so long as no damage to resources is caused. Alternative A also allows for physically challenged individuals (with a CPW permit) to travel off-route.

Under Alternative A, the Wilderness Study Areas, Oak Ridge SWA, and Moosehead Mountain are closed to snowmobiles. There are no other restrictions for motorized over the snow travel in the rest of the field office.

Alternative A is the only alternative where the BLM would identify (map) areas within the field office needing improved public access.

Route density within big game seasonal ranges, East Douglas ACEC, and the Wolf Creek and Coyote Basin ferret management areas is included in Alternative A to guide future implementation decisions.

### 3.1.2. *Alternative B*

Rather than allowing travel on any existing route, Alternative B would limit travel (outside of closed and open areas) to designated routes. Alternative B would retain the closed areas in the 1997 RMP (Alternative A) while also adding lands with wilderness characteristics areas, the Indian Valley and Anderson Gulch parcels, the proposed Big Ridge backcountry conservation area, and three riparian parcels within the White River ACEC, and parcels adjacent to closed “roadless” areas on the White River National Forest. However, under Alternative B, the Moosehead Mountain closed area would be modified to allow for camping on the west side near Harpers Corner Road.

Alternative B proposes four open areas close to towns in the planning area, including LO7 Hill, the Rangely Rock Crawling Park (rock slabs), North Rangely, and North Dinosaur.



Alternative B reduces exceptions for off-route travel (to one vehicle length) for dispersed camping, firewood gathering, harvesting Christmas trees, and game retrieval. Alternative B would also eliminate exceptions for physically challenged individuals to be consistent with BLM policy<sup>1</sup>.

For motorized over the snow travel, Alternative B would expand the closed areas so that areas that are closed for motorized travel are also closed to motorized over the snow travel. Greater sage-grouse priority habitat and big game severe winter range and winter concentration areas would be limited to designated routes. In the rest of the field office, motorized over the snow travel would be permitted off of designated routes so long as there was at least 18 inches of snow cover.

Wilderness Study Areas would be closed to mechanized travel (including game carts). Within the rest of the field office, mechanized travel would be limited to designated routes but game carts could be used off-route.

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### **3.1.3. Alternative C**

Alternative C is similar to Alternative B in that travel outside of closed and open areas would be limited to designated routes. Rather than being closed to motorized travel, BLM land associated with the Oak Ridge SWA, Pike Ridge, Indian Valley, Anderson Gulch, and the Olive Garden parcel in the White River Riparian ACEC would be limited to designated routes. Lands with wilderness characteristics areas would be limited to primitive routes. Under Alternative C, the Moosehead Mountain closed area would be further modified to allow for camping on both the west side near Harpers Corner Road as well as two other locations on the route to the Turner Creek pond.

Seasonal limitations (area closures) would restrict travel from October 1 to April 30 in specified big game winter habitat areas and from March 1 to July 15 in specified sage-grouse breeding and nesting areas.

Alternative C proposes four open areas in the same places as Alternative B. Under Alternative C, the proposed open areas at LO7 Hill, North Rangely, and North Dinosaur would be larger than under Alternative B. Within the Rangely Rock Crawling Park, the proposed open areas (rock slabs) are the same under Alternatives B and C.

Travel up to 100 ft off-route would be permitted for dispersed camping, firewood gathering, harvesting Christmas trees, and game retrieval.

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<sup>1</sup> Under section 504 of the Rehabilitation Act of 1973, no person with a disability can be denied participation in a Federal program that is available to all other people solely because of his or her disability. Wheelchair and mobility devices, including those that are battery-powered, that are designed solely for use by a mobility-impaired person for locomotion, and that are suitable for use in an indoor pedestrian area, are allowed in all areas open to foot travel. There is no legal requirement to allow people with disabilities to use motor vehicles on roads, primitive roads, or trails or in areas that are closed to motor vehicle use. Restrictions on motor vehicle use that are applied consistently to everyone are not discriminatory. Generally, granting an exemption from designations for people with disabilities would not be consistent with the management objectives of the planning area. (BLM Travel and Transportation Handbook H-8342, page 14)

Similar to Alternative B, Alternative C would manage motorized over the snow travel so that the areas that are closed for motorized travel are also closed to motorized over the snow travel. Greater sage-grouse priority habitat and big game severe winter range (but not winter concentration areas) would be limited to designated routes. In the rest of the field office, motorized over the snow travel would be permitted off of designated routes so long as there was at least 18 inches of snow cover.

Mechanized travel would be managed the same as in Alternative B, however the seasonal limitations for big game and sage-grouse would apply to mechanized travel as well as to motorized travel.

Route density in Alternative C is similar to Alternative A but would also include LO7 Hill and sage-grouse habitat.

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### **3.1.4. Alternative D (Preferred Alternative)**

Alternative D is similar to Alternatives B and C in that travel outside of closed and open areas would be limited to designated routes. Continuing current management (Alternative A), the WSAs and the BLM land associated with Oak Ridge SWA would remain closed to motorized travel. The Moosehead Mountain closed area would be modified to allow for camping in three locations: on the west side near Harpers Corner Road, on the south side at the existing gate (but not as far as to Turner Creek Pond as in Alternative C), and on the north side. Similar to Alternative B, Alternative D also proposes for Indian Valley, Anderson Gulch, parcels along the White River ACEC (Beefsteak, Olive Garden, and Hardaway), and parcels adjacent to closed, roadless areas on the White River National Forest to be closed to motorized vehicles.

Depending on the unit, lands with wilderness characteristics would either be managed as closed, limited to designated routes, limited to primitive routes, or limited to designated or primitive routes.

Alternative D proposes four open areas in the same places as Alternatives B and C. The LO7 Hill and North Dinosaur open areas would be larger than Alternative B and smaller than Alternative C. The North Rangely open area would be slightly smaller than Alternative B. Within the Rangely Rock Crawling Park, the proposed open areas (rock slabs) would be similar to Alternatives B and C except for Little Moab.

Within limited areas, travel off-route would only be permitted to allow vehicles to park off of routes for safety (pull off of routes for the minimize clearance to allow another vehicle to pass when driving or parking). The BLM would not allow motorized travel off of designated routes for activities such as dispersed camping, firewood gathering, harvesting Christmas trees, and game retrieval.

Similar to Alternatives B and C, Alternative D would manage motorized over the snow travel so that the areas that are closed for motorized travel are also closed to motorized over the snow travel. Big game severe winter range and winter concentration areas would be limited to designated routes. In the rest of the field office, motorized over the snow travel would be permitted off of designated routes so long as there was at least 18 inches of snow cover.

Mechanized travel would be managed similar to Alternatives B and C. However, Moosehead Mountain, Oak Ridge, and the White River Riparian ACEC parcels would be closed to mechanized travel. Game carts would be allowed everywhere except for WSAs.

Similar to Alternative A, the BLM would use route density to inform subsequent implementation planning but would also apply it to LO7 Hill. Unlike Alternative C, route density would not apply to sage-grouse habitat.

### **3.2. Alternatives Considered but Eliminated from Detailed Analysis**

Based on scoping comments, preliminary planning issues, and public comment on the preliminary alternatives, the WRFO considered several alternatives that were subsequently eliminated from detailed analysis. Rationale for eliminating these alternatives from detailed analysis is provided in Appendix B, Section B.3.

1. Combine travel management planning with recreation management planning and consider designation of Special Recreation Management Areas (SRMAs).
2. Designate the entire Rangely Rock Crawling Park as open for motorized travel.
3. Within the Rangely Rock Crawling Park, extend the open areas at least 100 ft beyond the rock slab edges to provide safe use of these sites.
4. Expand the LO7 open area to accommodate long range target shooting.
5. Identify another open area near Dinosaur and Snake John Reef.
6. Close portions of LO7 Hill to motorized and mechanized use (east of the open area).
7. Designate Canyon Pintado National Historic District (NHD) as closed to motorized travel.
8. Manage all ROW exclusion areas as closed to motorized travel, including the South Cathedral Bluffs, Raven Ridge, Coal Draw, and Black's Gulch ACECs and areas within 330 feet of occupied habitat for federally listed and proposed plants.
9. Designate sage-grouse priority habitat management areas as closed to motorized travel.
10. Apply seasonal limitations on motorized travel in Tier 2 lands with wilderness characteristics areas during big game hunting seasons and critical winter use periods.
11. Manage big game migration corridors and winter concentration areas for a route density of 1 mi/mi<sup>2</sup>.
12. Include temporary routes (oil and gas access routes) in the route density calculations since these may be gravel roads that are used for decades.

13. Include routes that are seasonally closed in the route density calculations.
14. Identify landlocked parcels and other parcels that are inaccessible and develop strategies for providing access to those lands.
15. Provide no exceptions for off-route motorized travel for camping, firewood gathering, or big game retrieval.
16. Limit mechanized travel to designated routes for only a portion of the field office (rather than the entire field office).
17. Use seasonal limitations to restrict travel associated with antler shed hunting.

## 4. ISSUES

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The CEQ Regulations state that NEPA documents “must concentrate on the issues that are truly significant to the action in question, rather than amassing needless detail” (40 CFR 1500.1(b)). While many issues may arise during scoping, not all of the issues raised warrant analysis in an environmental assessment (EA). Issues will be analyzed if: 1) an analysis of the issue is necessary to make a reasoned choice between alternatives, or 2) if the issue is associated with a significant direct, indirect, or cumulative impact, or where analysis is necessary to determine the significance of the impacts.

### 4.1. Issues Analyzed in Detail

The following issues are analyzed in detail in this EA (Section 5):

#### Recreation and Lands with Wilderness Characteristics

1. How would changes in the amount or type of access affect recreational settings and opportunities? (Section 5.1.1)
2. How would changes in the amount or type of access affect lands with wilderness characteristics? (Section 5.1.2)

#### Terrestrial Wildlife

3. Would closed areas, seasonal limitations, restrictions on over the snow travel, and route density be effective in reducing behavioral impacts to big game (e.g., habitat avoidance and increased energetics)? (Section 5.2.1)
4. Would closed areas, seasonal closures, and route density be effective in reducing behavioral impacts to nesting habitat for greater sage-grouse and migratory birds (e.g., habitat avoidance and decreased nest attendance)? (Section 5.2.2)
5. Would closed areas, seasonal closures, and route density be effective in reducing impacts to white-tailed prairie dogs and associated wildlife species? (Section 5.2.3)

#### Soil Resources and Water Quality

6. How would motorized and mechanized travel affect erosion of soils? (Section 5.3.1)
7. How would soil erosion associated with motorized and mechanized travel affect water quality, particularly in 303(d) listed perennial streams and in watersheds contributing to Colorado cutthroat trout habitat in East Douglas ACEC? (Section 5.3.2)

#### Cultural and Paleo Resources

8. How would proximity of routes to sites contribute to the physical damage or potential looting of cultural sites and scientifically important paleontological resources? (Section 5.4.1)

#### Visual Resources

9. How would the proposed LO7 Hill and North Dinosaur open areas impact the scenic quality in those areas with VRM Class II objectives? (Section 5.5.1)

#### Vegetation

10. How would proximity to routes and allowances for off-route travel impact special status plant species? (Section 5.6.1)
11. Would closed areas and limitations that restrict travel to designated routes impact the ability of the public to harvest woodland and timber products (e.g., firewood and Christmas trees)? (Section 5.6.2)

## **4.2. Issues Not Analyzed in Detail**

#### Cultural and Paleontological Resources

1. **Would travel affect the visual and auditory setting of historic and traditional cultural properties known to be important to Native American tribes?**

Auditory impacts from motorized vehicles along designated routes is temporary and would not cause long-lasting effects to cultural properties. Visual impacts of BLM roads tend to be minimal and would not substantially impact most historic properties. The only known traditional cultural property in the WRFO would not be affected by this proposed action. In addition, field visits to the Rangely Rock Crawling Park and North Dinosaur open areas with the Ute Indian tribe of the Uintah and Ouray Reservation and the Southern Ute Indian Tribe have identified mitigation strategies to avoid sensitive resources.

#### Vegetation and Wildlife Habitat

2. **Does mechanized travel have the same influence on wildlife as motorized travel?**

Mountain biking activity can result in avoidance of suitable habitat by wildlife (Taylor and Knight 2003, Naylor et al. 2009, Miller et al. (1998)). However, use of non-motorized mechanized vehicles, largely bicycles, within the Planning Area is relatively dispersed and low frequency and at present does not figure prominently in big game habitat impairment. Large organized bicycling events or promotion of area-specific use have been limited to the Anderson Gulch site, which abuts the town of Meeker and an established county-managed recreation area. Allowing for the use of non-motorized mechanized travel on designated routes within closed areas (outside WSAs) would, depending on the intensity and season of use, impose impacts on big game largely similar

to that of motorized vehicles and would add incrementally to projected levels of habitat impairment. Based on the character of affected lands, Moosehead Mountain closed area would be most likely to attract concentrated and persistent mechanized use during the period of animal occupation. Focusing attention on and increasing use of the Moosehead Mountain closed area for bicycles, at any level, would be expected to seriously degrade the utility of seasonal big game habitats and drastically reduce the abundance and duration of big game use (especially elk) on these areas. This concern would also extend to the BLM lands integral with the Oak Ridge SWA.

**3. How would changing management from limited to existing routes to limited to designated routes affect resources?**

Managing for existing routes has contributed to the sometimes inadvertent, but unauthorized, expansion of the BLM road and trail network since 1997. For example, one existing RMP decision (Table 1, Record 4) states that OHV travel is restricted to existing roads and trails from October 1 through April 30 of each year (922,200 acres), which also means that vehicle use is not restricted to roads and trails from May 1 through September 30. This management action allows all motor vehicle operators including summer recreationalists and big game archery hunters, to legally drive off travel routes in a total area of 922,200 areas. Repeated vehicle travel of the same travel route or when soils are saturated can lead to the creation of what may appear to the next traveler or recreationalist as an existing road or trail. If a motorized vehicle user sees this newly created road or trail after September 30, they may then travel this new route believing it is an existing road or trail. This has led to the creation of unauthorized travel routes. This type of “travel network creep” is difficult to monitor, control, and manage. As technology improves the capability of OHVs, terrain that was once not possible to travel across, becomes more accessible to OHV use. The increase in the popularity and capability of side-by-side OHVs or utility terrain vehicles (UTVs) has allowed more OHV operators with average operating skills to access more difficult terrain in the past few years.

Unauthorized off-route travel can also be difficult to prevent, manage, and control in the 362,707 acres (Table 1, Record 4) that are designated as limited to existing routes (year round). Once a new travel route is illegally created by repeated use or when soils are saturated and left visible tire tracks, the next motor vehicle operator may perceive the new route as an existing route and continue to use this route. If not reclaimed and closed, these new user-created travel routes can become part of the existing travel network. These routes are typically not sustainable, travel circuitously through vegetation and terrain, and degrade with additional use over time.

Finally, another existing RMP management action (Table 1, Record 11) allows vehicles to travel up to 300 feet from an existing road or trail to park, camp, gather firewood, etc. as long as damage to resources does not occur. Hunters are allowed to travel any distance off-route to retrieve big game so long as resource damage doesn't occur. Repeated use of the same travel route often creates a new, but existing, travel route and many visitors are not sure what exactly resource damage means or how it is defined. The prevention of resource damage that occurred as a result of this management action has proved difficult to enforce over the years.

In contrast, limiting motorized and mechanized travel to designated routes (as in Alternatives B, C, and D) would substantially reduce the off-route motorized travel

impacts and the “travel network creep” impacts under Alternative A. There would still likely be a low amount of illegal off-route travel, but there would be no confusion if it was allowed or not allowed. This would provide a defined and manageable travel route network. The interim management of limiting motorized travel to existing routes as depicted in the 2014-2016 travel route inventory would serve to reduce the “travel network creep” impact and provide an accurate map of existing routes.

#### Management of Livestock and Wild Horses

4. **Would travel management decisions affect livestock grazing operations?**

The BLM would consider exceptions to allow for motorized travel in areas where it is otherwise restricted in order to allow for permitted users to carry out tasks necessary for their authorized operations. In most instances, this would require prior written approval from the Authorized Officer with the exception of trailing or gathering livestock within an allotment or animal husbandry (Table 1, Record 12). Implementation of proposed open areas has considered whether fencing is necessary to reduce user conflicts and maintaining access to existing water developments.

5. **Would closed areas and limitations that restrict travel to designated routes affect management of wild horses or opportunities for public viewing of wild horses?**

Administrative access would be allowed to conduct any necessary management work. There would be some loss of wild horse viewing opportunities by the public on routes that are restricted. However, viewing of wild horses in most cases is a matter of being in the right place at the right time and the public would be able to use all other available routes for the viewing of wild horses.

#### Access for Energy Development, Rights-of-Way Holders, and Wildland Firefighters

6. **Would travel route designations affect development of Federal mineral resources or issuance of right-of-way grants?**

The RMPA would recognize valid existing rights which includes the right to construct and maintain roads for mineral exploration and development and for maintenance of existing ROW facilities; and would provide access to private property through BLM parcels that are closed or seasonally closed through a right-of-way. (Table 1, Records 3 and 13).

7. **Would travel route designations impede access during emergencies such as search and rescue operations or wildland fires?**

Route designations would not impede emergency operations such as search and rescue or wildland fire fighting efforts. Whenever practicable, emergency operations would remain on designated routes in order to minimize impacts to other resources. However, any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes is exempt from restrictions on motorized travel (Section 3.1.4, 43 CFR 8340.0-5).

#### Human Health and Safety

8. **Would establishing the North Rangely open area increase the risk of hydrogen sulfide (H<sub>2</sub>S) exposure to the public?**

The North Rangely open area is located within the Weber Sand Unit, which is an active oil and gas field, whose production contains hydrogen sulfide (H<sub>2</sub>S) gas. The open area would not have active oil and gas operations within the boundaries; however, there are five active oil and gas facilities around the proposed open area (Chevron FV Larson B-15X, Carney C T 18-35, Carney 40x35, FV Larson B-23X, and W H Coltharp A-8X).

H<sub>2</sub>S is a poisonous gas and can be fatal at low concentrations but is “Immediately Dangerous to Life and Health” at a concentration of 500 ppm (parts per million). H<sub>2</sub>S also kills the smell receptors of the human olfactory system at 100 ppm. It is also heavier than air and therefore sinks into low-lying areas.

A review of Chevron’s Rangely H<sub>2</sub>S Operations Plan and Public Protection Plan 2017 identified that all of the wells within the proposed open areas have relatively low concentrations of H<sub>2</sub>S at the 100 foot and 500 foot exposure radiuses. H<sub>2</sub>S concentrations range from 2.6 ppm up to 50 ppm at the 100-foot radius of exposure levels and from 1.2 ppm up to 22.5 ppm at the 500-foot radius. Based on the implementation actions under the alternatives it is unlikely that any of the alternatives would increase the overall public safety issues associated with H<sub>2</sub>S in the Rangely oil field beyond those that exist under a dispersed use of roads and trails currently being observed within the area.

## Socioeconomics

### **9. How would travel management decisions affect local social and economic conditions?**

The WRFO acknowledges the contributions to local social and economic conditions from access to BLM-administered lands for recreation and other authorized uses including livestock grazing and mineral development. Both the 2015 Proposed RMPA/Final EIS for Oil and Gas Development Final EIS (Oil and Gas FEIS) and the 2015 Northwest Colorado Greater Sage-Grouse Proposed Land Use Plan Amendment/Final EIS (GRSG FEIS) discuss in detail the existing social and economic conditions (Section 3.10 and Section 3.24 respectively) and the social and economic contributions from these authorized uses (recreation, livestock grazing and mineral development) in the Planning Area (Section 4.10 and Appendix G; and Section 4.25 and Appendix N respectively) and are hereby incorporated by reference. For example, both FEIS’ discuss how recreational visitation contributes to local economic activity through expenditures on gas, food, lodging, and local purchases of gear. Whereas the GRSG FEIS considers the economic impacts of all BLM and Forest Service related recreation visitation on a broader, state-level scale, the Oil and Gas FEIS emphasized effects on hunting and tourism activity in the immediate Planning Area (WRFO). Both FEIS’ also provide considerable discussions on other values, such as nonmarket values associated with recreation, livestock grazing, and other WRFO resources.

The WRFO develops rough estimates of visitor use based on 6-12 traffic counters and CPW hunter statistics. The estimate over the past five years is 280,000 to 355,000 visitors per year within the Planning Area totaling 1.1 to 1.4 million visitor days. What is unknown is how the travel management decisions would directly affect visitation numbers of the various recreational opportunities across alternatives. While Section 5.1



of this EA discusses potential impacts to recreational opportunities, the inability to quantify changes in visitation numbers does not allow for a quantitative economic impact analysis to be conducted.

## **5. AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS**

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A description of the planning area is provided in Section 1.2. Assumptions for analysis (including past, present, and reasonably foreseeable future actions) are located in Appendix F.

### **5.1. Recreation and Lands with Wilderness Characteristics**

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#### ***5.1.1. How would changes in the amount or type of access affect recreational settings and opportunities?***

##### **Affected Environment**

The Planning Area provides a broad spectrum of recreation opportunities, experiences, and beneficial outcomes, affording visitors an array of settings for primitive and dispersed recreation, as well as some developed recreation sites. Throughout the Planning Area recreational activities are typically dispersed and unstructured, and currently include activities such as hunting, off-highway vehicle (OHV) riding, visiting rock art sites, hiking, mountain biking, camping, horseback riding, target shooting, fossil collecting, fishing, snowmobiling, and canoeing. The limited developed recreation facilities within the Planning Area include: 17 information kiosks, 8 interpretive cultural sites in Canyon Pintado National Historic District, 4 interpretive cultural sites along the Dragon Trail, the Rangely Rock Crawling Park, the non-motorized Meeker Trails System, and the Big Trujillo River Put-in.

The WRFO develops rough estimates of visitor use based on 6-12 traffic counters and CPW hunter statistics. The estimate over the past five years is 280,000 to 355,000 visitors per year within the Planning Area totaling 1.1 to 1.4 million visitor days. Of this, approximately 50,000 to 52,000 visitors are big game hunters and 37,000 to 42,000 visitors are using the Canyon Pintado National Historic District developed recreation sites.

Over recent years the WRFO has administered 50-60 Special Recreation Permits (SRPs) annually for commercial use, competitive events, and organized group use events. The majority of these SRPs (35-40) have been for commercial guiding of big game hunters with 10-14 SRPs issued for commercial guiding of mountain lion hunters. The other SRPs have been issued for guided backpacking trips, horse rentals, fossil digs, guided canoe trips, competitive motorized events, and competitive trail running events. All of these SRPs use and depend on the existing BLM travel and transportation system in order to operate their businesses. While some SRP holders have unique motorized access to BLM lands (meaning use of private roads that enter BLM lands that are not accessible to the public), no SRP holders have been authorized to use the BLM travel and transportation system differently than the public in the 1997 White River RMP. The commercial guiding of big game and mountain lion hunters has been a tradition use of local

public lands that provides the largest economic return to the communities compared to any other recreational activity in the past several years.

Detailed information about the recreational settings and the identified Recreational Opportunity Spectrum for the Planning Area can be found in the 2015 Proposed RMPA/Final EIS for Oil and Gas Development in Section 3.7.4 and is hereby incorporated by reference.

### **Impacts Common to All Alternatives**

There is no known motorized use on BLM-managed waters (lakes, ponds, and reservoirs) and very little practical opportunity for this type of recreational activity in the Planning Area. By closing these waters to motorized use, there would be no change in the traditional use or access and the recreational opportunities and settings are expected to remain the same.

All motorized aircraft would be required to have a use authorization for take-off and landing locations on BLM-managed lands or waterways. The existing RMP is silent on this type of use and there have been issues with helicopters landing in areas without BLM authorization or in areas that are managed to provide a non-motorized setting. This would allow, but control and manage, this type of use to mitigate impacts to resources or resource values, and provide a means to communicate this type of authorized use between BLM staff, the public, and other agencies.

Recreation opportunities and proposed management for lands with wilderness characteristics units are discussed in Section 5.1.2.

### **Alternative A (No Action Alt) – Direct and Indirect Effects**

#### ***Closed Areas***

Some existing RMP management decisions related to motorized travel have created high quality big game hunting experiences and areas, while other areas have been difficult to manage and have not consistently met the intended outcome. A variety of areas that have limited or no motorized vehicle access provide quality hunting experiences based on field observations and discussions with hunters, outfitters, and guides. These high quality hunting experiences are generalized and include: opportunities with a likelihood of seeing the desired game species, not overcrowded, and a setting with a low likelihood that motorized vehicles would impact the hunt. Depending on weather conditions, habitat conditions, and the time of year, some of these areas include: the six WSAs, Cow Creek drainage, Moosehead Mountain area, Oak Ridge BLM parcels, and the Indian Valley area. These areas are all closed to motorized travel during the big game hunting season or year round.

Moosehead Mountain provides high quality big game hunting opportunities, but the boundary in this alternative does not provide for any camping areas near this area closure. This has resulted in big game hunters camping with motor vehicles within the closed area boundary each year.

The Oak Ridge parcels are surrounded by CPW State Wildlife Area lands and private property, and therefore have provided high quality hunting opportunities that complement the same experience managed for on the CPW lands with no known management issues related to motorized travel.

Indian Valley area has an area that is “limited to designated routes”, but there were no routes designated as open to the public in this area, and it has therefore functioned as a non-motorized area over the years with very few illegal motorized incursions into this area.

The Pike Ridge closed area was developed with the intention of providing a high quality non-motorized setting for big game hunting. However, over the past five years, based on visitor reports and BLM staff knowledge, this area has had motorized use in this area during the big game seasons. Some of this motorized use is a result of the closed area having three private property parcels located within it, and the property owner is legally accessing their property. Other motorized use is a result of unauthorized use of existing travel routes in this area. This area is fairly remote and difficult for BLM staff to regularly monitor throughout all the big game hunting seasons. Overall, this area has not consistently provided the non-motorized high quality hunting experience or setting that many hunters have been seeking or expecting. This closed area also does not provide for any parking area adjacent to the primary access route into this area, which is the end of RBC Rd 27. The field office boundary between the WRFO and Grand Junction Field Office crosses the road on the southern portion of this closed area several times, which increases the complexity of managing this area depending on how each office is managing motorized use on routes that travel north from this road into the closed area.

### ***Seasonal Closures***

The Cow Creek seasonal closure (8/15-11/30) does not affect any travel routes that are open to the public, but there are private property owners that can access over ten travel routes from their adjacent private property, and the seasonal closures prevents them from using these routes during the big game hunting seasons.

The Timber Gulch/Hay Gulch seasonal closure (8/15-11/30) affects three short, dead end travel routes that are open to the public. There are over twenty travel routes in this area that private property owners can access from their adjacent property into this area. The motorized use of the travel routes that travel from private property onto BLM lands are difficult to monitor to ensure the intent of this seasonal closure is being achieved.

### ***Open Areas***

There are currently no designated open areas within the Planning Area. However, all four open areas proposed under the other alternatives have been receiving extensive off-route motorized use in those areas for several years. If these areas were continued to be managed as limited to travel routes, there would need to be reclamation of the off-route ground disturbance in these areas, as well as extensive signage, monitoring, and enforcement efforts coordinated in order to restore these areas and direct motorized traffic to travel routes only.

### ***Over the Snow Travel***

Snowmobiles can travel off-route throughout the Planning Area except in Moosehead Mountain, the Oak Ridge BLM parcels, and the six WSAs. Conditions for snowmobile use in the Planning Area are not consistent from year to year, and there has not been much evidence of snowmobile use in the Planning Area, even during years with enough snow to provide this opportunity. Use is typically dispersed when found or witnessed and is often associated with mountain lion hunting in the winter.

### ***Route Density***

While it has not yet been implemented, the RMP does include route density management actions for the East Douglas ACEC, Wolf Creek and Coyote Basin Ferret Management Areas, and big game seasonal ranges. Appendix F (Section F.6) estimates the current route densities for selected portions of the Planning Area. In some areas, the existing route network meets the identified route density. In other areas, the existing route network exceeds the identified route density. When implemented, this could indirectly increase non-motorized primitive recreation opportunities by providing more of this type of setting and by reducing impacts to big game species and potentially improving big game hunting opportunities over the long term. This could also impact those seeking the same amount of existing motorized recreation opportunities by reducing the number motorized routes available for public use. There may also be unanticipated impacts to the connectivity of the BLM transportation system in areas where route densities are targeted to be at or below 1.5 mi/mi<sup>2</sup>.

## **Alternative B – Direct and Indirect Effects**

### ***Closed Areas***

Alternative B would carry forward the same closed areas as Alternative A (WSAs, Moosehead Mountain, Oak Ridge SWA, and Pike Ridge), however Moosehead Mountain would be modified to allow for camping. Alternative B also proposes to close all lands with wilderness characteristics, Indian Valley (effectively closed in Alternative A), Anderson Gulch, Big Ridge, three parcels within the White River Riparian ACEC, and six parcels adjacent to the White River National Forest (additional 431,600 acres compared to Alternative A).

Moosehead Mountain would have a 7,518 acre closed area. This area provides high quality non-motorized big game hunting opportunities, has been managed as a non-motorized area since 1997, and has very few compliance or management issues over the years. There would be new motorized use and associated camping allowed on the west side of this area where a two-track route leaves Harpers Corner Road and then travels approximately a half mile north to private property.

The Pike Ridge/Brushy Point/East Douglas area would have 25,963 acres closed (which includes 14,454 acres and 11,509 acres in the Pike Ridge and Brush Point lands with wilderness characteristics units, respectively). This remote part of the Planning Area has very limited motorized access and this proposed closed area would likely result in similar motor vehicle use and adverse impacts as described under Alternative A, but across a larger area and would include four private property inholdings.

Indian Valley has an 11,052 area that has been “limited to designated routes” since 1997, but there were no routes designated as open to the public in this area, therefore this area has functioned as a non-motorized area or setting with high quality big game hunting opportunities over the years, with few known illegal motorized incursions into this area. An additional approximately 1,500 acres would be added to this closed area (as part of the North Colorow lands with wilderness characteristics unit). This additional area has one low use two-track primitive road located in it. All other travel routes in this area are not accessible to the public. This area has a designated parking area with an information kiosk on the south side.

The 1,914 acre Anderson Gulch proposed closed area is located adjacent to the north side of Meeker. This parcel is part of a non-motorized trail system designed for hiking and biking that connects to hiking and biking trail located the Eastern Rio Blanco Metropolitan Recreation and Park District's (ERBM) Phillip and Dorcas Jensen Memorial Park and Sanderson Hills Park, as well as the Town of Meeker's Ute Park for a total 11.5 mile trail system known as the Meeker Trail System. The approximately 3 miles of motorized travel routes on this parcel can only be accessed by permission through several private property owners and are used by those maintaining the existing communication infrastructure and the Federal Aviation Administration site on this parcel. This closed area would provide a non-motorized semi-primitive setting for recreationalists, would not close any motorized routes that are open to the public, and would complement the same travel rules in the areas where the trails are located in the adjacent parks. The BLM completed a Trails Master Plan for this parcel in February 2015 (DOI-BLM-CO-NO5-2014-0116-EA) that allows for the construction and maintenance of up to 20 miles of non-motorized trails, including using the existing roads. This closed area would provide a unique backyard-to-backcountry community connection with trailheads located adjacent to the Town of Meeker.

The proposed Big Ridge Backcountry Conservation Area (BCA) (28,026 acres) overlaps with the Big Ridge lands with wilderness characteristics unit (24,952 acres). This large area currently provides high quality big game hunting opportunities, but does have several miles of primitive roads and motorized trails located within it. The area that is not located within the lands with wilderness characteristics boundary is approximately 4,000 acres and located on the east side of the top of Big Ridge. The eastern boundary of this area does not seem to follow any intuitive or visible boundary such as geographic features or roads. This boundary also isolates road segments outside of the proposed closed area and has one route that accesses private property. Implementing this BCA boundary closure may be challenging considering the existing amount of roads and trails and the locations, but this would provide a large non-motorized area with high quality non-motorized hunting opportunities.

The Beefsteak, Olive Garden, and Hardaway parcels are all located within the White River Riparian ACEC and would provide non-motorized fishing and waterfowl hunting opportunities along the White River. Closing the Beefsteak parcel to motorized travel would not allow any future river access improvements for motor vehicles such as a parking area or river put-in/take-out however there is a pullout on the north side of the highway that provides access to this site. The Beefsteak site receives relatively low use throughout the year. The Olive Garden is located on the north side of Rangely; this closure would not restrict future motorized river access improvements such as a parking area or a river put-in/take-out because the closure follows the river's edge at two locations north of this closed area. Recreationalists access this area from RBC Rd 46 and there is an area between this closure and the road where future parking or river access could be developed. The Olive Garden site receives a moderate amount of use throughout the year. The Hardaway closed area is located approximately 12 miles west of Rangely; this closure would not restrict future motorized river access improvements such as a parking area or a river put-in/take-out because there would be two areas located adjacent to RBC Rd 102 and one area adjacent to RBC Rd 2 that are outside of this closed area and could facilitate future improved motorized access to this portion of the White River. The Hardaway site receives relatively low use throughout the year.

The six parcels adjacent to closed, roadless areas on the White River National Forest (WRNF) (total 1,987 acres) would be closed and managed consistently with adjacent lands on the WRNF. This would provide seamless non-motorized, primitive recreation opportunities and experiences in these areas. There would be no closed motorized routes that are open to the public on these parcels, but there are portions of non-motorized trails on two parcels that would remain open to public use.

### **Open Areas**

The proposed open areas (118 acres) consist of providing the minimum areas to accommodate the existing OHV use that has been occurring at these sites over the past several years. The LO7 Hill proposed open area (5 acres) would include the existing OHV play area (disturbed area) and a small area for parking to accommodate 4-6 vehicles with OHV trailers. This area would likely not be able to accommodate an OHV skills course that is large enough to include all the technical OHV features needed to provide new OHV riders the appropriate experience and skill set needed for intermediate to advanced trail riding. By adding 4-8 more acres to the east of this open area there would be enough for a robust OHV skills course and enough parking area for 10-15 vehicles towing OHV trailers.

The North Dinosaur proposed open area (50 acres) includes the primary OHV use area, but there is evidence of dispersed OHV off-route travel throughout the BLM lands within a few miles north of the Town of Dinosaur. This area is defined by roads on all sides, but the ideal location for a parking area is located just outside of this boundary on the northeast side of Moffat County (MC) Rd 161. This area provides some interesting OHV riding opportunities and has outstanding views of the surrounding landscape, but there is more varied and challenging OHV riding terrain in the drainage located just outside the north side of this area.

The North Rangely proposed open area (11 acres) includes the primary OHV use area, but there is evidence of some dispersed OHV off-route travel surrounding this area. The primary features at this site are two short, steep hill climbs with a variety of routes and options to challenging advanced OHV riders as well as return routes and a flat area for starts and run outs. This area would be large enough to accommodate the construction of a small parking area and an OHV skills course where existing terrain and routes could be incorporated. This area has a relatively flat bottom area (4 acres) that could be used by beginning OHV riders to gain basic skills.

The Rangely Rock Crawling Park (52 acres of open areas) was initially authorized for rock crawling use in 2005 (CO-110-2005-218-EA) and expanded in 2010 (DOI-BLM-CO-110-2010-0155-EA), but both of these authorizations were for motorized vehicles to travel on designated routes on the rock slabs only. The 2010 EA included constructing three parking areas and installing three kiosks as well as installing signage. The Rangely Rock Crawling Park has hosted numerous competitive events over the years, some of which have drawn hundreds of visitors to this site. These proposed open areas would provide for open or unlimited motor vehicle travel across all mapped rock slabs shown in Figure 8. This would allow drivers to pick a rock crawling rock on each rock slab to meets their skill set, vehicle capability, or desired challenge. There would also be route-by-route implementation decisions made for all travel routes located within the rock crawling park in order to provide for the appropriate ingress/egress of the rock slabs.

### ***Over the Snow Travel***

Over-snow travel would be closed in 441,800 acres. This would provide vast opportunity for non-motorized winter recreation and may benefit other resources as well. There is a relatively low demand for this type of activity and a slightly higher demand for motorized winter recreational, mostly associated with mountain lion hunting activities. Over-snow travel would be limited to designated routes in 462,913 acres to reduce impacts to wildlife. This would provide motorized access through these areas, but would not allow off-route snowmobile “play” or any other off-route winter travel. It may be difficult to implement and enforce the boundaries of these areas. The remaining portions of the Planning Area would be designated as open with no minimum snow requirement for use of designated routes, and at least 18 inches of snow cover for over-snow motorized travel off of designated routes. To implement this management action, it would be each snowmobiler’s responsibility for operating on adequate snow depths at all times when traveling off route. If there are melted areas of inadequate snow or south facing slopes with less snow, then it is the snowmobiler’s responsibility to stay off those areas.

## **Alternative C – Direct and Indirect Effects**

### ***Closed Areas***

The closed area acreage for the WSAs, the riverine Beefsteak and Hardaway parcels, and the parcels adjacent to the WRNF would be the same and have the same impacts as Alternative B.

The BLM land associated with the Oak Ridge SWA would be limited to designated routes which would not be compatible with the non-motorized setting provided on adjacent SWA lands. Public access is prohibited on Oak Ridge SWA from December through July 15 of each year, and from July 16 through November of each year. This SWA only allows motorized travel to parking areas near the boundaries of the area and has consistently provided high quality non-motorized hunting opportunities seamlessly across BLM and SWA lands over the years. Allowing motorized travel on designated routes on these BLM parcels would likely result in conflict between motorized recreationalists and those seeking a non-motorized recreational setting and experience, and would impact the existing non-motorized setting currently found in this area.

Under Alternative C, there would be more opportunities for camping in the Moosehead Mountain area compared to the other alternatives. Alternative B would allow for two pull outs for parking/camping and one area for camping along the road on the southwest border of this area from Harpers Corner Road, and motorized use of this route would be extended into the Turner Creek drainage with another camping area and parking area near the pond in upper Turner Creek. There has been a demonstrated need over the past several years for appropriate camping and parking areas on the west side of the existing gate on this route, which restricts motorized use beyond that point. There were two public comments in favor of extending the motorized use of this route past the existing gate approximately 1.25 miles into the Turner Creek drainage to near a pond to increase the amount of camping areas, provide motorized access for those not physically able, for camping in the aspen groves, and for more OHV trails for game retrieval. By extending the motorized access to this area, the route would need to be re-constructed for the entire 1.25 miles. There is also approximately 180 feet of this existing route that travels through private property. There would need to be a new portion of this route constructed around this property or an easement granted for the public to travel through this area. There would also need to be extensive fencing and signing near the pond to prevent motor vehicles

from traveling outside of this area and into a non-motorized area. The existing gate also has a fence line on either side and has functioned well to prevent motorized use in this area. Moosehead Mountain has consistently provided big game hunters a high quality non-motorized hunting setting and opportunities. By allowing motorized use into this area or providing motorized trails for game retrieval, this area would likely not provide these same settings and opportunities. There are numerous hunters that travel to this area each year from across the country for the non-motorized setting and the high quality hunting it provides.

The 1,914 acre Anderson Gulch parcel would be limited to designated routes. This would allow only the private property owners adjacent to this parcel to have motorized access on this parcel, which has a non-motorized trail system that connects to two ERBM-managed parks and a Town of Meeker park. This would impact nearly all of the recreationalists accessing this parcel from the adjacent public parks and could impact the middle-country/backcountry setting on this parcel depending on the amount and type of motorized traffic.

The Olive Garden riverine parcel would be limited to designated routes. This would provide more future flexibility to consider improving motorized access to the White River at this site, such as constructing a road, parking area, and/or boat put-in/take-out but this would not provide certainty that this site would always provide a non-motorized experience for recreationalists.

### ***Seasonal Closures***

There would be a seasonal closure for motorized, mechanized, and over-snow use from January 1 to April 30 in five areas totaling 25,634 acres and from March 1 to July 15 in six areas totaling 21,195 acres (Table 1, Record 9). These new seasonal closures would provide a primitive non-motorized setting and opportunity in those areas for that time and would impact those seeking a motorized setting and experience in those areas during those times.

### ***Open Areas***

The proposed open areas would be expanded under this alternative compared to Alternative B, except the Rangely Rock Crawling Park, which would remain the same.

The LO7 Hill Open Area would be expanded from 5 acres under Alternative B to 50 acres. This would provide ample space for constructing a future potential OHV skills course and other developed riding areas. This would also increase the diversity of terrain by including the drainage to the south.

The North Dinosaur Open Area would be expanded from 50 acres to 150 acres and include a drainage to the north and an area up to an existing motorized route as a boundary. The drainage area would increase the diversity of experiences at this site and the entire area would provide more OHV open riding opportunity.

The North Rangely Open Area would be expanded from 11 acres to 37 acres and include more of the drainage to the north. This would provide more open OHV riding opportunities and increase the diversity of experience offered at this site.



### ***Over the Snow Travel***

For over-snow travel there would only be 89,500 acres closed compared to 441,800 acres under Alternative B. Implementing and enforcing these over-the-snow restrictions may be costly and difficult with extensive signage, monitoring, and educational efforts in order to be effective.

### ***Route Density***

Compared to Alternative A, route density would remain the same for the East Douglas ACEC, ferret management areas, and big game severe winter range and summer range (1.5 mi/mi<sup>2</sup>). However, Alternative C would lower the route density from 3 mi/mi<sup>2</sup> to 2.5 mi/mi<sup>2</sup> for big game winter range. Alternative C would also use route density to manage sage-grouse habitat (1.0 mi/mi<sup>2</sup> within two miles of a lek and 1.5 mi/mi<sup>2</sup> within priority and general habitat). These route density prescriptions would also include mechanized travel as well as motorized travel.

The route density for the remaining BLM lands on the LO7 Hill parcel outside of the proposed open area would be 1.0 mi/mi<sup>2</sup>. To achieve this route density would necessitate the closure (at least seasonally) of at least 11.4 miles of routes on LO7 Hill. For those seeking a non-motorized big game hunting experience this would be beneficial, but for those seeking the traditional motorized experience that LO7 Hill has provided over the past several decades, this would be an impact to their desired experience.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Closed Areas***

The closed area acreage for the WSAs, BLM land associated with the Oak Ridge SWA, Indian Valley, Anderson Gulch, White River Riparian ACEC parcels, and parcels adjacent to the WRNF would be the same as in Alternative B.

Moosehead Mountain would have a 7,538 acre closed area (Figure 6). This area would provide opportunities for motorized camping adjacent to this area while protecting the non-motorized setting and high quality hunting opportunities currently found in this area. Allowances for camping would be found on the north, west, and south sides of the parcel. Alternative D would allow for a larger camping area near the existing gate than in Alternative C but would not allow for camping at the Turner Creek Pond. This alternative would provide additional camping opportunities without requiring re-construction of the old two-track and extensive fencing and signing to prevent motorized use in the closed area around Turner Creek Pond.

### ***Seasonal Closures***

Compared to Alternative C, Alternative D drops the proposed big game seasonal closures and retains five of the six proposed sage-grouse seasonal closures. The areas that would be subject to seasonal limitations (closed to motorized and mechanized travel) from March 1 to July 15 (20,332 acres) would impact those seeking these types of recreational experiences in these areas only. This would mostly likely impact shed antler hunters and other OHV recreationalists.

### ***Open Areas***

The proposed open areas (167 acres) consist of providing four open areas that provide a variety OHV riding opportunities near communities with boundaries that are either defined by topography or roads, or that can be defined with additional signage or fencing. Alternative D

provides a balance of providing high quality OHV riding opportunities and minimizing impacts to other resources.

The LO7 Hill proposed open area (16 acres) would include the existing OHV play area or ground disturbance area, an area for parking of 10-15 vehicles with OHV trailers, and an area for the development of a future OHV skills course (Figure 7).

The North Dinosaur proposed open area (91 acres) includes the primary OHV use area, a parking area, and a portion of a drainage in the northern portion that would provide varied and challenging OHV riding opportunities (Figure 10).

The North Rangely proposed open area (10 acres) includes the primary OHV use area with two steep hill climbs, a flat parking area, a potential area for a small future OHV skills course, and a vegetative buffer between the boundary and RBC Rd 46 (Figure 9).

The Rangely Rock Crawling Park (50 acres of open areas) would be the same as Alternatives B and C except the Little Moab rock slab would no longer be available for motorized use (Figure 8). There would also be route-by-route implementation decisions made for all travel routes located within the rock crawling park in order to provide for the appropriate ingress/egress of the rock slabs (Figure 17). The closure of some of the existing routes due to resource concerns would result in a loss of connectivity in the park, especially between the eastern end of the Broken Chain slab and the route to the north.

### ***Over the Snow Travel***

Over-snow motorized travel would be closed in 197,924 acres, which is the same as other motorized travel. This would provide similar non-motorized opportunities as described above, but in a winter setting. Over-snow travel would be limited to designated routes in 598,527 acres to reduce impacts to wildlife and in lands with wilderness characteristics areas that are closed. This would provide motorized access through these areas, but would not allow off-route snowmobile “play” or any other off-route winter travel. The remaining portions of the field office would be designated as open with no minimum snow requirement for use of designated routes, and at least 18 inches of snow cover for over-snow motorized travel off designated routes. It may be difficult to implement, educate recreationalists, and enforce the boundaries of these areas, but this is planned to be conducted by placing maps and information at kiosks, public information centers in nearby communities, and by distributing maps of this information. The past several years’ snow conditions have not provided extensive over-the-snow motorized recreational opportunities on BLM lands within the Planning Area.

### ***Route Density***

Alternative D clarifies that route density is an analysis tool and not an allocation decision (Table 2, Record 32) and that route densities will be considered along with public access needs when making route designation decisions but the BLM would still consider closing routes, limiting to administrative use, or applying seasonal restrictions to reduce wildlife impacts attributable to vehicle use. Alternative D is very similar to Alternative C with the exception of LO7 Hill and sage-grouse general habitat. There would be no identified route density for sage-grouse general habitat (it would default to whatever big game seasonal range is present in the area). The route density for LO7 Hill would increase from 1.0 mi/mi<sup>2</sup> (in Alternative C) to 1.5 mi/mi<sup>2</sup>.

## Cumulative Effects

Overall, the management described above would have a variety of incremental changes to recreational access and settings across the landscape as implemented, monitored, and enforced over the years. However, the vast majority of this landscape would provide similar settings and opportunities as currently exist in those areas. The open areas and closed areas would provide more certainty for recreationalists and the opportunities would be retained over time. Nearly all areas may be directly or indirectly affected by different degrees by oil and gas related development, grazing activities, and/or ROWs. Future route-by-route travel management plans would have the most influence on changing recreational settings and opportunities and public access depending on how routes are designated for future public use.

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### ***5.1.2. How would changes in the amount or type of access affect lands with wilderness characteristics?***

#### **Affected Environment**

The WRFO has identified 33 separate lands with wilderness characteristics units or areas that total 298,850 acres. Details about the WRFO inventory process, which was conducted from 2011-2013, and descriptions of each lands with wilderness characteristics unit can be found in the 2015 Proposed RMPA and Final EIS for Oil and Gas Development (Section 3.9) and is hereby incorporated by reference. In general, the minimum wilderness characteristics for each unit are that each unit must be 5,000 acres of contiguous roadless BLM lands, appear natural or primarily affected by the forces of nature, and have either outstanding opportunities for solitude or outstanding opportunities for a primitive and unconfined type of recreation opportunity. More information about lands with wilderness characteristics can be found in BLM Manual 6310.

Lands with wilderness characteristics do not contain “roads” but they may contain “primitive routes”. Primitive routes are defined in the BLM’s Travel and Transportation Management Manual (MS-1626) as any transportation linear feature located within lands with wilderness characteristics designated for protection by a land use plan and not meeting the wilderness inventory road definition. A transportation linear feature is defined as a linear ground disturbance that results from travel across or immediately over the surface of BLM-administered public lands. In areas where linear disturbances such as Wilderness Inventory Roads, developed rights-of-ways, or pipeline corridors protrude into a land with wilderness characteristic unit, but do not bisect the unit, the boundary is sometimes drawn around the linear disturbance. This type of boundary adjustment is referred to as a cherry-stem in the unit boundary descriptions.

In the 2015 WRFO Record of Decision/Approved RMPA for Oil and Gas Development, management decisions were made about how lands with wilderness characteristics would be managed in regards to oil and gas development. The most restrictive management is in Tier 1 areas (about 24 percent of the lands with wilderness characteristics units in the Planning Area) which are managed “to protect wilderness characteristics as a priority over other multiple uses” (i.e., oil and gas development). These areas are managed with a No Surface Occupancy stipulation, are right-of-way exclusion areas, and new road construction or improving or maintaining primitive routes is not allowed.

## **Impacts Common to All Alternatives**

The sights and sounds of motorized vehicles within lands with wilderness characteristics can impact the solitude and naturalness characteristics found in these areas depending on the frequency of use, type of use, travel restrictions, and the location of the travel routes.

Exceptions for administrative use (BLM or permitted users) are described in Table 1, Record 12. These exceptions are designed to result in no perceivable long-term impacts to wilderness characteristics in the lands with wilderness characteristics units. There may be instances where an exception would be granted that could impact the solitude of those traveling in these areas, but it would likely be a short-term temporary impact with no long-term impairment of wilderness characteristics. Off-route motorized travel without written approval for gathering livestock within an allotment would likely have the most potential of the various exceptions that could impact the solitude found in these areas depending on the amount of overlap between livestock permittees and those seeking solitude and a primitive recreational experience in these areas. This type of travel is expected to be non-routine, dispersed occurrences a few times per year in each area.

## **Alternative A (No Action Alt) – Direct and Indirect Effects**

The variety of travel management designations under Alternative A would have a range of impacts to the identified lands with wilderness characteristics units.

Two lands with wilderness characteristics units (Moosehead Mountain unit and half of the Pike Ridge unit) are in closed areas which would protect these areas from impacts associated with motorized travel (except for those impacts associated with administrative use).

The entirety of eight lands with wilderness characteristics units and a portion of another five units are located in areas of the Planning Area that currently limit motorized travel to designated routes year round. Limiting motorized travel to designated routes would prevent some of the potential off-route impacts to wilderness characteristics (e.g., naturalness), but would not prevent the potential for impacts to solitude.

In almost a third of the Planning Area, motorized vehicles are only limited to existing routes from October 1-April 30 of each year (which allows for off-route travel from May 1-September 30). This designation can result in unpredictable and unmanageable off-route travel and route proliferation and has the greatest potential for impacts to lands with wilderness characteristics. There are nine units that are located entirely within this designation as well as a portion of another 11 units. To exacerbate the situation, this alternative allows travel off-route up to 300 ft for parking, camping, and firewood cutting, etc. These exceptions have contributed to the unmanaged expansion of the BLM travel network over the years. When off-route travel results in visible tire tracks or rutted soil, the next motor vehicle operator may choose to travel that same route and when repeated this results in a newly created existing travel route. If enough illegally or inadvertently travel routes are created in a concentrated area, the naturalness found in that area could be eliminated from that portion of the unit. If the size of a unit is reduced to below 5,000 roadless acres, the area would not meet the minimum requirement to be considered lands with wilderness characteristics. This area designation would leave uncertainty for managing lands with wilderness characteristics and anticipating impacts.

Overall, this alternative would result in lands with wilderness characteristics located in 14,352 acres of closed areas, 132,674 acres of limited to designated route year round areas, and 151,869 acres of seasonally limited areas. The remaining lands with wilderness characteristics would be located in areas where motorized vehicles are limited to existing routes for a portion of the year.

Over-the-snow motorized use is unrestricted in all units, except for the portion that overlaps the Moosehead Mountain ACEC which is closed to snowmobiles. While non-motorized winter travel is not common in any of the lands with wilderness characteristics units, the noise associated with this use would create an impact to the solitude or primitive recreational opportunities. It is unknown if snowmobiling would increase in the lands with wilderness characteristics units in the future or if primitive, non-motorized recreational activities during the winter would increase in these areas.

### **Alternative B – Direct and Indirect Effects**

Alternative B would close all areas identified in the Planning Area as lands with wilderness characteristics (298,850 acres) to motorized travel, including over-the-snow motorized travel. This would ensure that there would be no public motorized vehicle impacts to the solitude and potentially the naturalness characteristics found in these areas. This would provide outstanding opportunities for primitive and unconfined recreation in these areas, but would be the most costly and challenging alternative to implement and monitor. The installation of gates, signs, and the reclamation of some routes would be necessary to implement this alternative and yearly monitoring and inspection of these sites would be necessary. There would be approximately 395 miles of existing primitive routes that would be closed to public motorized use (although several miles of these routes are not currently publicly accessible and some of these primitive routes with public access are not currently passable by motorized vehicles).

Overall, this alternative would result in the most beneficial effects to lands with wilderness characteristics throughout the Planning Area. It would provide numerous areas for those seeking a primitive non-motorized recreational setting and experience but would negatively impact those seeking a motorized recreational setting and experience.

### **Alternative C – Direct and Indirect Effects**

Alternative C would limit motorized travel (including over the snow travel) to existing and identified primitive routes located within lands with wilderness characteristics units (292,617 acres), except for areas that overlap with the Moosehead Mountain ACEC which would remain closed (6,233 acres). If, in the future, motorized vehicle use of these primitive routes were to remain at the same level and intensity for all routes as it has over the past several years, there would likely be only a relatively few minor, short term impacts to solitude and naturalness in these areas.

The condition and use of each primitive route varies. Several of the primitive routes located in these areas appear to be naturally reclaiming and are receiving relatively low to no use. Other user-created primitive routes receive a low amount of intermittent use during the big game hunting seasons. However, based on current state-wide and national trends, it is anticipated that motorized use in general would increase to some degree in the future throughout the Planning Area. It is unknown if some of these primitive routes may see such an increase that the solitude and naturalness characteristics could be diminished over the years. Also, because the primary

recreational activity in the Planning Area is big game hunting, this alternative could cause undesired recreational experiences in these areas if some hunters are trying to experience a primitive, non-motorized hunting experience while other hunters are using motorized vehicle as part of their hunting experience.

If use of a primitive route increases and becomes a regular occurrence, another subsequent future inventory of the travel route may result in finding a primitive route (that was once mechanically constructed but naturally reclaiming) is now being used regularly and may meet the road definition. This would result in the route being “cherry-stemmed” or removed from the boundary, or if it bisects a unit, a portion of the unit may be removed. This type of potential impact could reduce the acreage or even eliminate the unit from meeting the minimum criteria for being managed as a lands with wilderness characteristics unit. This alternative leaves some uncertainty about the potential future impacts to the solitude and naturalness currently found in these areas.

There are two seasonal closures for big game (March 1 to July 15) that overlap with the Upper Coal Oil Rim (Unit 20) and Coal Oil Gulch (Unit 22) lands with wilderness characteristics units. These seasonal closures would serve to limit impacts from motorized travel to the solitude and naturalness found in these areas during this time. However, the majority of recreational activity takes place outside of this timeframe and during the big game hunting seasons. There is some spring and early summer recreational OHV riding in these areas, but it’s a fairly low amount of dispersed use in these areas at this time.

This alternative allows over-snow travel on primitive routes in the lands with wilderness characteristics areas. This would increase over-snow access through these areas but not allow off-route use in these areas. There is potential for recreationalists seeking a primitive non-motorized experience in these areas to be impacted by the motorized use. Most years snow pack is not sufficient for over-snow use in many of these areas or for short periods of time, and there is currently very low demand for winter non-motorized primitive recreation settings and opportunities in most of these areas.

#### **Alternative D (Preferred Alt) – Direct and Indirect Effects**

There are eight proposed closed areas that would each have a closed area larger than the minimum 5,000 roadless acres to prevent motor vehicle impacts from impacting the minimum size needed for an area to be considered having wilderness characteristics. These eight areas overlap, but not entirely, with each Tier 1 area for oil and gas development, except for Unit 32 (Willow) and Unit 33 (Bull Canyon South). Units 32 and 33 are less than 5,000 acres in size, but are inventoried as lands with wilderness characteristics because the unit is contiguous with a WSA, which is an exception to the size requirement in BLM Manual 6310 (Conducting Wilderness Characteristics Inventory on BLM Lands). These two units would be limited to primitive or designated routes to allow for motorized access to the WSA lands and associated motorized camping adjacent to primitive routes. Tier 1 areas total 71,500 acres and lands with wilderness characteristics closed areas under this alternative would total 76,656 acres. The remaining 222,367 acres of lands with wilderness characteristics would be limited to designated or primitive routes. There would be a total of approximately 56 miles of primitive routes closed to motor vehicles under this alternative. Most of these travel routes that would be closed to motor

vehicles do not currently have public access and several routes that do have public access are not in a current condition that allows passage of motor vehicles). None of the closed primitive routes would connect to other BLM travel routes so there would be no loss in connectivity across the landscape with the current transportation network.

The Moosehead Mountain unit would have a 7,794 acre closed area for lands with wilderness characteristics plus another 1,202 acre closed area for ACEC resources that is connected to the lands with wilderness characteristics unit by a State Trust Land (STL) parcel that is currently leased by CPW for public hunting without motorized access (Figure 6). Public motorized use of this area has not been allowed since the 1997 RMP was signed. Along the western and southern borders of the lands with wilderness characteristics closed area there would be areas that would allow motorized camping. This would impact wilderness characteristics in those areas, but should serve to concentrate this use at these existing camping areas and reduce motorized camping impacts in other areas.

The Big Ridge unit would have a 24,209 acre closed area (Figure 23). The existing primitive routes that are publicly accessible would be “cherry-stemmed” or excluded from the closed area boundaries. The designation of whether these routes would be open for motorized travel by the public would be determined in a future travel management plan. All of the closed area boundaries are based on using existing roads, which should be efficient to implement and monitor, and uncomplicated for the public to recognize and navigate around.

The Coal Ridge unit would have an 8,025 acre closed area (Figure 24). There would be seven to eight existing primitive routes that would be closed to public use. These routes are all relatively short with low use, are all dead end routes, and do not connect to any other travel routes. The travel routes in the northwest portion of this unit would not be in the closed area and do connect to other BLM lands.

The North Colorow unit would have a 10,131 acre closed area (Figure 25). While there are existing primitive routes within this area, none of the routes are publicly accessible. This area was limited to designated routes in the 1997 RMP, but none of the routes in this area were designated for public motorized use. Therefore, public access in this area would be the same as it has been since 1997.

The Pike Ridge unit would have a 7,239 acre closed area (Figure 26). This results in the closure of two low use routes that are located within an area that was closed in the 1997 RMP. This closed area boundary is designed to be more intuitive for the public to recognize, using existing roads and prominent ridges or drainages as boundaries. The northeast and northwest portion of this unit (7,233 acres) would not be closed and could have impacts such as those described under Alternative C.

The Pinto Gulch unit would have a 5,031 closed area (Figure 27). There are two routes that would be “cherry-stemmed” in this unit to provide access into this area. One route travels into Pinto Gulch providing access to the middle portion of the unit, similar to what has existed in the past. The other “cherry-stemmed” route connects from BLM Rd 1512 through a STL parcel onto BLM lands in this unit. The STL parcel is currently leased by CPW for public hunting only with

a BLM easement on the road through the parcel. Because there is only public use on the STL parcel for a portion of the year, this route would provide year access to BLM lands in this area.

The Upper Coal Oil Rim unit would have a 7,860 acre closed area (Figure 28). There would be three low use, dead-end routes closed and two route “cherry-stemmed” within the unit which provide some motorized access into the area. All existing travel routes that connect through this unit to other BLM lands would not be within the closed area. There would be 5,415 acres in this unit not located in the closed area that could have impacts from motor vehicle use that are described under Alternative C.

The Whiskey Creek unit would have a 6,365 acre closed area (Figure 29). The impacts would be the same as those described under Alternative B.

The other areas and units that would not be in a closed area would have the same impacts as those described under Alternative C. Limiting motorized travel to designated or primitive routes in these areas would provide the ability for future route-by-route travel management decisions to take a site-specific and comprehensive look at impacts to wilderness characteristics while also considering the connectivity of the transportation network and impacts to recreationalists and recreational settings and opportunities.

Overall, this alternative provides relatively similar motorized access to BLM lands, compared to what currently exists, while providing long-term assurance that the closed areas would continue to retain the existing wilderness characteristics found in those areas. These areas would provide non-motorized primitive recreational settings and outstanding opportunities for solitude and primitive recreational activities such as big game hunting, hiking, backpacking, and horseback riding. There would be very few existing travel routes closed to public motorized use as a result of these closed area because the boundaries “cherry-stem” or are drawn around several existing routes that dead end inside these areas. Therefore, this would minimally impact those seeking the same amount of motorized access in these areas. These boundaries would also be cost effective to implement and easily recognizable on-the-ground for recreationalists.

## **Cumulative Effects**

There is potential for the development of oil and leases to impact any lands with wilderness characteristics not located in a Tier 1 area. More details about these potential impacts are described in the 2015 Proposed RMPA and Final EIS for Oil and Gas Development (Section 4.9.6). These impacts would largely depend on the location, extent, and type of oil and gas development.

Because land with wilderness characteristics inventories are to be updated on a continuing basis, there is potential for existing primitive routes outside of closed areas to either continue to naturally reclaim (and thus improving wilderness characteristics) or to receive more motorized use in the future (and thus impact wilderness characteristics).

Closing a total of 76,656 acres of lands with wilderness characteristics to motorized travel would likely improve the diversity of recreational setting and opportunities provided across the approximately 1.5 million acres Planning Area.



## 5.2. Terrestrial Wildlife

### ***5.2.1. Would closed areas, seasonal limitations, restrictions on over the snow travel, and route density be effective in reducing behavioral impacts to big game (e.g., habitat avoidance and increased energetics)?***

#### **Affected Environment**

Three populations of elk occur in the Planning Area: the Blue Mountain herd, Yellow Creek herd, and White River herd. The White River herd is the largest of the three elk herds, with an estimated population of 35,000-40,000 elk in 2015. The Yellow Creek and White River herds have current populations that are within or slightly above CPW's population objectives, while the Blue Mountain herd is substantially larger than CPW's objective. Elk production areas, movement corridors, and severe winter range are considered critical habitat in all herd units, and summer range is considered critical for the Yellow Creek and Blue Mountain herds.

There are also three general herds of mule deer in the Planning Area: the Rangely (Blue Mountain) herd, the Douglas Pass (Bookcliff) Herd, and the White River (Piceance Basin) herd. The White River herd is the largest, with an estimated population of 40,000-45,000 deer in 2015. The populations of the White River and Rangely herds are substantially lower than the CPW population objective, while the Douglas Pass herd is near population objectives. Mule deer production areas, movement corridors, and severe winter range are considered critical habitat for mule deer.

The Planning Area encompasses a dozen CPW Game Management Units (GMUs) but four of these GMUs (i.e., 10, 11, 21, and 22) capture 95 percent of the Planning Area. The BLM-managed public lands in the remaining GMUs comprises less than 10 percent of each GMU's total extent such that travel management prescriptions become increasingly problematic, ineffectual, or impractical to implement.

More detailed information about big game populations and seasonal ranges can be found in the 2015 Proposed RMPA/Final EIS for Oil and Gas Development (Section 3.3.2.1) and is hereby incorporated by reference.

#### **Impacts Common to All Alternatives**

##### ***General Effects of Avoidance***

Motorized and non-motorized vehicle use on an extensive public land road network is thought to represent the most pervasive and substantive influence on big game in the Planning Area. Road-related effects on big game vary as a function of the frequency and duration of use, the density and distribution of the road network across affected habitats, species-specific reaction to road-based activity, and vegetation and terrain-derived cover.

Demonstrated widely for big game since the 1970's (Rost and Bailey 1979) and now more precisely defined with GPS technology (e.g., Preisler et al. 2006) is the tendency for big game to avoid human activity associated with the use of access roads and trails. The distance at which big game consistently react (e.g., flight, avoidance, elevated alert) to human and vehicular activity

has been variously reported depending on the species, terrain, cover, and the nature of the disturbance but generally does not fall below 660 feet (Rost and Bailey 1979; Taylor and Knight 2003; Ward 1986; Preisler et al. 2006; Webb et al. 2011). Recent investigation of mule deer response to natural gas development in the Piceance Basin (Lendrum et al. 2012) suggested that deer tended to avoid roads in more heavily developed areas by an average distance of 470 feet and attributed moderated avoidance response in part to vegetation and terrain-derived cover that may reduce displacement.

Rost and Bailey (1979) suggested that big game avoidance increases with increased frequency and intensity of road use and that deer avoidance was more pronounced in open shrublands than those with woodland cover-- relationships that have been more recently corroborated (Wisdom et al. 2005; Webb et al. 2011). Several studies (Sawyer et al. (2009a); Rowland et al. (2000); Wisdom et al. (2005); Cole et al. (1997)) have indicated a response to relatively small traffic levels (e.g., 6 to 16 vehicle trips daily) which suggests that in hunted public land populations of big game, restricting even occasional traffic may have important influences on animal distribution and, ultimately, animal availability to public land hunters.

### ***Consequences of Avoidance***

Avoidance of human activity, regardless of form, has important ramifications on big game energetics (e.g., avoidance movements, heightened state of alert) (Geist 1978) and nutrition (e.g., reduced time foraging and access to available forage, displacement from preferred foraging sites) that, in turn, have consequences on fitness and performance (e.g., survival, reproduction) at the individual and population level. As effective forage availability becomes increasingly constrained by removal or avoidance response, and animal use is incrementally relegated to smaller proportions of more optimal seasonal range, it is inevitable that the capacity of the range to support former numbers of animals would deteriorate, and eventually increase the probability of density-dependent adjustments in animal abundance. Bartmann et al. (1992) demonstrated strong nutritionally-driven density-dependent winter mortality in mule deer in the Piceance Basin.

Where deer and elk co-exist inter-specific competition may confound predictable responses to disturbance. There are strong indications that in summer and winter, elk displace deer from areas more distant from travelled roads and force deer to occupy areas in closer proximity to disturbance (Wisdom et al. 2005; Stewart et al. 2010). With acreage distant from roads (i.e., greater than 1,640 feet) limited in extent (i.e., 16-28 percent of major GMUs, Appendix F, Table F3) and widely scattered across the Planning Area, road-related influences on elk distribution may widely displace elk to more remote watershed positions and displace deer into areas increasingly close to roads that results in more frequent contact with disruptive activity.

### ***Effects of Mode of Travel***

Most forms of human activity on big game ranges have been demonstrated to prompt a big game avoidance response, including motorized wheeled vehicles, over the snow motorized travel, and bicycling (e.g., Naylor et al. 2009, Taylor and Knight 2003, Freddy et al. 1986). Animal response relative to each of these activities is not uniform and is influenced by duration and frequency of exposure, cover (vegetation or terrain), noise levels, season, and predictability of disturbance, but each has been implicated in prompting substantial animal displacement in space and time.

Among the more prominent forms of recreational vehicle use, motorized vehicle use tends to elicit longer distance displacements that, with repeated exposure, are more apt to change distribution patterns that provide broad separation from corridors of human activity (Preisler et al. 2006; Vieira 2000; Naylor et al. 2009).

Mountain biking activity on trails in a non-motorized, unhunted, and heavily used recreation area resulted in mule deer fleeing from activity 500 ft away and moving over 400 ft from that activity (Taylor and Knight 2003). In a controlled experiment, ATV use and mountain biking on a road system were consistent in causing the largest increases in elk avoidance movements and largest declines in time available for foraging compared to hiking and horseback riding. Although there was no evidence that elk habituated to ATV or mountain biking activity, elk resumed normal patterns of behavior more quickly when exposed to mountain biking, perhaps since noise associated with this activity abates more quickly at distance (Naylor et al. 2009).

Animals tend to react less strongly to patterns of human activity that are predictable (e.g., uninterrupted motion along established routes). Over the snow travel is, by nature, less confined to established roadways and, when so, becomes a source of disturbance whose pattern of use is unpredictable to big game and that can quickly encroach on areas animals have selected to avoid established road-bound vehicle use patterns.

### ***Density and Distribution of Routes***

Since the late 1970s, wildlife managers have attempted to establish a relationship between roads and declines in habitat utility, especially for elk. Thomas et al. (1979) modelled the impact of open roads on the potential effectiveness (i.e., ability of big game to obtain optimum use of habitat) of summer deer and elk habitat in Oregon and Washington. They determined that secondary road densities of 1, 2, and 3 mi/mi<sup>2</sup> reduced potential summer habitat effectiveness for elk by 26, 40, and 52 percent. The authors cautioned that road effects on big game winter ranges were likely more pronounced. Although the disturbance buffers vary, this original concept has endured and has proved remarkably sound.

However, the spatial arrangement of roads has a substantial influence on how absolute road density influences the utility of habitat and big game distribution (Rowland et al. 2005) and there is an inherent weakness in relying solely on road density to accurately portray impacts to big game habitat utility (i.e., forage and cover resources whose use is adversely affected by proximity to roads). Systematically distributed road patterns influence larger proportions of any affected land base compared to random or clumped road patterns where there is more overlap in effect-buffers and a greater likelihood of large blocks of land remaining unaffected by roads (i.e., greater distances to open roads). As an example, Rowland et al. (2000) modelled a clumped pattern of open roads at a density of 5 mi/mi<sup>2</sup>. This pattern supported a block of habitat more than 3 times larger than a regularly distributed road pattern at a density of 3 mi/mi<sup>2</sup>. Assuming a 250 meter road-effect buffer, an open road density of 1 mi/mi<sup>2</sup> affects about 30% of affected lands regardless of road pattern, but open road densities of 3 and 5 mi/mi<sup>2</sup> may influence from 50-70 percent and 80-100 percent of affected lands, respectively (Rowland et al. 2000).

Although road density is a conveniently measured metric, there is a strong argument for tracking the proportion of lands that are increasingly distant from roads as the ultimate factor in managing avoidance-related effects on big game. Reducing overall road density is a relatively

straightforward process, particularly when targeting redundant roads or areas with high local road density. However, unless reductions in open-road density increases the amount of habitat more distant from open roads (at least during the period of occupation), there may be little, if any, inherently derived benefit to big game.

The interrelationship between oil and gas development and travel management is an important consideration in assessing the effects of route use and its influence on wildlife resources. Routes constructed solely to access oil and gas pads, pipeline corridors, or other associated infrastructure are considered resource roads that are generally temporary, albeit long term, and expressly subject to decommissioning and abandonment once access for that purpose is no longer necessary. Much of the oil and gas development projected to take place in the Piceance Basin (e.g., GMU 22) is expected to integrate access management that limits vehicle traffic on pad-dedicated roads to entities legitimately involved with facility maintenance and production only, thereby reducing the frequency of vehicle travel (e.g., less than 1 trip per day) and reducing adverse big game responses on these access networks to the lowest practical extent. However, it is unlikely that access restrictions for oil and gas development would be effectively implemented in other areas within the Planning Area (e.g., GMU 21, 11, and 10) since the incentives to consider route management (i.e., conditional exceptions from big game timing limitation stipulations) may not be as valued by industry for well pad locations with lower numbers of wells. Because of this uncertainty, route density calculations were based consistently on all inventoried routes. Appendix F (Section F.6) describes methods used for calculating route densities and also contains tables depicting current route densities under various management strategies.

### **Alternative A (No Action Alt) – Direct and Indirect Effects**

Current travel management strategies are confined primarily to area closures (e.g., WSAs, Oak Ridge, Moosehead Mountain) and small tracts where vehicle use is relegated to designated routes (e.g., ACECs, Wilson Creek). Although route density objectives were established as a habitat management strategy in the 1997 RMP, the WRFO had yet to develop Travel Management Plans to implement the decision. Implementing former route density objectives are considered under this alternative.

#### ***Closed Areas***

Existing area closures encompass about 6 percent of the 4 major GMUs and provide for important localized reductions in vehicle-related effects on big game but with the exception of Moosehead Mountain and Oak Ridge SWA they were not designed to specifically target important areas for big game. Overall, closures encompass 16 and 4 percent, respectively, of the big game summer and winter ranges in the major GMUs and are not broadly determinant in managing big game utility at scales that measurably affect big game populations.

The BLM inholdings in the Oak Ridge comprise about 5 percent of the elk winter concentration area in GMU 23. However, since these parcels are interspersed among the more extensive CPW parcels, the BLM's travel management decisions are capable of strongly influencing the utility of the adjoining habitat on CPW lands. Collectively, the BLM and CPW lands within the SWA account for 30 percent of the elk winter concentration areas in GMU 23. At the present time, Oak Ridge SWA is accessible by foot or horseback only from July 16 to November 30 and, in the

interest of reducing energy demands on big game, is closed to all public use from December 1 to July 15. CPW lands provide the only public access to BLM lands associated with the SWA and CPW access management strategies are thus default BLM management.

The Moosehead Mountain closed area encompasses 10 percent of the total critical summer habitats available to elk in GMU 10 and 45 percent of all its aspen communities. This 1990 closure coincided with a dramatic, unanticipated response by elk. The BLM allocated forage to accommodate 47 elk in GMU 10 north of US 40 in 1981 and elk populations in GMU 10 in 2017 were estimated at 4,000 head. Presently, BLM lands on Moosehead Mountain alone support consistent mid-spring through mid-winter use by hundreds of elk and are instrumental in its having become a popular area for trophy elk hunting in GMU 10 over the last three decades. The Moosehead vehicle restrictions were expressly applied to motorized travel, such that this closure remains vulnerable to the effects of mechanized vehicle use (i.e., comparable to motorized effects) on animal avoidance and displacement.

### ***Seasonal Closures***

The hunting season closures in Cow Creek and Timber/Hay Gulch (August 15 to November 30) were meant to provide non-motorized recreation opportunities, but lacking complementary management of vehicle use by adjacent land owners, serve no substantive role in reducing big game energy demands, alleviating habitat disuse or imbalanced distribution of big game, or providing non-motorized hunting recreation in GMU 22 (involves 9 percent of the unit's summer range and 4 percent of all winter ranges).

### ***Over the Snow Travel***

The effects of over-the-snow travel on wintering big game on BLM lands in the Planning Area are presumed to be localized at present, but risk attending such travel remains unpredictable and potentially expansive and severe. Over the snow travel represents a form of disturbance that is imposed on big game during the most resource-restricted and energetically expensive period of the year--a time of respite when snow conditions typically confine wheeled vehicle travel to increasingly fewer roads across increasingly smaller expanses of late winter big game habitat. However, except for established vehicle closure areas (e.g., WSAs, Moosehead Mountain), existing management allows unregulated cross-country use of over-the-snow vehicles. Ninety-seven percent of the Planning Area's severe winter ranges and 93 percent of all winter ranges remain vulnerable to the effects of these vehicles which, compared to wheeled vehicles, can elicit more severe avoidance and harassment effects owing to their capacity for higher speed and unpredictable approaches toward big game. It is recognized that steep slopes, rock, woody vegetation, and snow conditions may reduce the expanse of big game winter ranges available for over the snow vehicle operation, but those moderating effects are inconsistent and unpredictable.

### ***Route Density***

Road-related effects on big game are most easily expressed by the amount of habitat use forfeited in space and time due to animal avoidance of activity associated with vehicle use. As a means of estimating each alternative's overall effect on big game habitat utility, the routes within each GMU's seasonal range were buffered on either side by 470 feet to calculate the area where animal use is presumed to be most seriously impaired. Based on WRFO's latest route inventory information, 33 percent of the major GMUs in the Planning Area lies within 470 feet of mapped

routes (Table F12). Similarly, 72 to 84 percent of each major GMU in the Planning Area lies within 1,640 feet (0.3 mile) of mapped routes. These buffers represent distances where pronounced avoidance by deer and elk has been documented, either through locally-derived research (i.e., 470 feet for deer in Piceance Basin) or conservative values derived from elk studies (i.e., 1,640 feet) that were conducted in vegetation and terrain similar to much of the Planning Area's pinyon-juniper woodlands.

Existing route density on big game summer range varies from about 1.4 mi/mi<sup>2</sup> in GMU 10 to 2.8 mi/mi<sup>2</sup> in GMU 22 (Table F12). Respective route densities vary from 2.3 to 3.1 mi/mi<sup>2</sup> across severe winter range and from 1.7 to 2.1 mi/mi<sup>2</sup> across winter ranges and winter concentration areas (Table F12). This analysis indicates that more serious vehicle-related impairment of big game habitat extends to 28, 37, and 31 percent of the major GMU's summer range, severe winter range, and winter range/winter concentration areas, respectively.

Proposed travel management strategies would modify the current travel network to achieve average effective route densities of 1.5 mile/square mile on big game summer ranges and severe winter ranges and 3.0 mile per square mile on general winter range and winter concentration areas. As summarized in Table F12 and F13, current vehicle-related impairment of summer and severe winter range varies from 21-42 percent in the major GMUs and would be reduced to about 27 percent in Alternative A. On the other hand, impairment of general winter range and winter concentration areas that currently ranges from 25-34 percent may be allowed to increase to about 53 percent. With the exception of GMU 10 summer range, where prescribed route density would allow impairment that exceeds current levels by six percent, proposed route density prescriptions would generally reduce more pronounced vehicle-related impairment across 1-15 percent of the GMU's summer ranges and 7-13 percent of the GMU's severe winter range acreage (Tables F12 and F13). Route density prescribed for general winter ranges and winter concentration areas (3.0 miles per square mile) would allow for imposing strong vehicle-related impairment across an additional 19 to 28 percent of the GMU's general winter ranges and winter concentration areas (Tables F12 and F13).

In summary, implementing Alternative A route density objectives on the basis of overall big game seasonal ranges would generally reduce current vehicle-related habitat impairment of GMU summer and severe winter ranges by 4 and 27 percent, respectively, but would present a situation where impairment of general winter range and winter concentration areas may increase by up to 72 percent. Strong landscape level imbalances in impaired habitat on big game winter range and winter concentration areas would be expected to largely depreciate the benefits derived from reduced impairment on summer and severe winter ranges.

## **Alternative B – Direct and Indirect Effects**

### ***Closed Areas***

Area closures are an important facet of travel management in Alternative B, which increases the expanse of closed areas from 6 to 28 percent of the Planning Area. Although area closures can be an effective strategy to reduce overall disturbance-related effects on big game, their influence at the population level is contingent on how widely they are applied and/or how they coincide with big game seasonal ranges. The largest contributor to additional closures are lands with wilderness character. These areas would be closed for motorized vehicle use, but would remain

open for use by mechanized vehicles. From a big game management perspective, motorized and mechanized travel are capable of eliciting similar avoidance and displacement responses and are considered functionally equivalent for purposes of this analysis. It is recognized that the effects of mechanized vehicles used on lands with wilderness character may have limited or nominal influence on big game habitat utility depending on season of use and big game distribution (e.g., little mechanized vehicle use of severe winter range from December through March). However, trends in technology and user preference have stimulated trends that have progressively expanded mechanized activity onto big game seasonal ranges (e.g., mountain bikes, winter fat bikes). From another perspective, the identification and delineation of LWCs, by their nature, tend to support relatively low road densities and contribute little to broader road networks. Further, because wildlife-related values were not a criteria in their selection, they tend to represent disjunct habitats that are haphazardly distributed and do not generally contribute to the formation of contiguous blocks of habitat with higher functional value.

Motorized closure configurations were retained on the Moosehead Mountain and Oak Ridge SWA properties, although the Moosehead Mountain closure area would remain open to the use of mechanized vehicles on designated routes. Promoting the use of mechanized vehicles on Moosehead, at any scale, would be expected to severely compromise gains in big game occupancy made since instituting motorized vehicle restrictions. Because of its relatively small size, insular nature, and the limited extent of key big game features (e.g., aspen and serviceberry cover), seasonal big game use on Moosehead Mountain is particularly vulnerable to disruptive activities. With a high degree of certainty, promoting recreation activity during the late spring through late summer months would prompt strong, if not wholesale displacement of elk to expansive tracts of surrounding private and privately-controlled public lands (e.g., Luxen Draw) and Dinosaur National Monument and aggravate elk distribution problems in GMU 10 (e.g., reduced availability to public-land hunters). Big game sensitized to recreation use would not be expected to reoccupy public lands from secluded private holdings once big game hunting activities commence in August.

Moosehead Mountain boundary would be modified to allow for camping. Recognizing and accommodating low density camping use that takes place along roads that form the periphery of the Moosehead closure area would have no substantive influence on current big game distribution and use of this area.

### ***Over the Snow Travel***

Over-the-snow travel would risk impacting wintering big game in the same manner as Alternative A, but would differ in scale and distribution. Proposed management of over the snow vehicles would preclude vehicle-related effects on wintering big game across 27 percent of all big game winter ranges or roughly 20 percent of severe winter ranges and winter concentration areas and 30 percent of general winter ranges. Over the snow travel would be confined to designated routes (no exception for off-route, cross country use) on another 30 percent of winter ranges (severe winter range and winter concentration areas outside closed areas). This management strategy would limit the risk of widespread, unregulated over-the-snow vehicle use on important winter ranges, but would tend to extend the big game impacts attributable to wheeled vehicle use unabated through the later winter and early spring months. The remaining 43 percent of winter range would be subject to unconfined cross-country over-the-snow vehicle

operation when snowpack exceeds 18 inches. Although this measure is logical in the context of protecting vegetation and soil resources, it introduces a potentially intense, expansive, and unpredictable source of disturbance on wintering big game under the most challenging nutritional (e.g., limited forage availability), physiological (e.g., gestation), and energetic demands (e.g., 18 inches of snow increases deer locomotion costs by 500 percent).

### ***Route Density***

Route density objectives would not be applied as a travel management strategy in this alternative and there were no habitat-related selection criteria formulated that would have helped guide modification of existing road networks to benefit wildlife.

Current road densities in the four major GMUs are consistently highest on big game summer range, which varies from 1.4 to 2.8 mi/mi<sup>2</sup>, and severe winter ranges, which vary from 2.3 to 3.1 (Table F12). Road densities are consistently lowest on deer winter range and winter concentration areas (i.e., 1.65 to 2.77 mi/mi<sup>2</sup>). This analysis indicates that more serious vehicle-related impairment of big game habitat attributable to travel management in Alternative B would extend to 28, 37, and 31 percent of the major GMU's summer range, severe winter range, and winter range/winter concentration areas, respectively. Assuming current route densities were static over the life of the plan, collective motorized vehicle closures would be capable of reducing impairment of big game seasonal ranges by 2 to 6 percent. Modest reductions in big game habitat impairment are not commensurate with the substantive expansion of closure areas since a high percentage of newly proposed closures were composed of lands with wilderness character, which by nature tend to support relatively low road densities. Although adopting a designated route strategy across the Planning Area would be of marked advantage in more effectively managing road-related effects on big game, it is unlikely that this closure-oriented management strategy would have any measurable influence on big game demographics in the Planning Area.

## **Alternative C – Direct and Indirect Effects**

### ***Closed Areas***

Alternative C employs both seasonal and year-round closures with a collective extent comparable to Alternative A (8 percent of major GMUs). Year-round closures across GMU 21 summer range are reduced in this alternative by about 7,900 acres with the omission of Pike Ridge (about 8 percent of the GMU's summer range base), whereas an additional 7,660 acres of seasonal winter closures were included in GMUs 10 and 11 (5-7 percent of their total winter range base). No closures were proposed for GMU 22.

Although Moosehead Mountain would remain closed in this alternative, it includes a proposal to establish a "cherry-stem" access to the Turner Creek pond. Used as a means of discounting the physical presence of a road in otherwise roadless areas, cherry-stem roads can represent highly intrusive sources of wildlife disturbance. In this case, developing motorized access into the central interior of the Moosehead Mountain closed area and consequently intensifying non-motorized recreation use, including overnight camping, would severely compromise gains in big game occupancy made since instituting motorized vehicle restrictions in this area. Because of its relatively small size, insular nature, and the limited extent of key big game features (e.g., aspen and serviceberry cover), seasonal big game use on Moosehead Mountain is particularly



vulnerable to disruptive activities. With a high degree of certainty, promoting recreation activity during the late spring through late summer months would prompt strong, if not wholesale displacement of elk to expansive tracts of surrounding private and privately-controlled public lands (e.g., Luxen Draw) and Dinosaur National Monument and aggravate elk distribution problems in GMU 10 (e.g., reduced availability to public-land hunters). Big game sensitized to recreation use would not be expected to reoccupy public lands from secluded private holdings once big game hunting activities commence in August. The remote and concealed position of the proposed access and camping area would be especially difficult to monitor—a circumstance likely to complicate detection of transgressions and invalidate efforts to maintain big game occupancy on Moosehead.

This alternative also proposes to manage BLM parcels associated with the Oak Ridge SWA as limited to designated routes (rather than as a closed area). The Oak Ridge SWA is positioned under circumstances similar to that discussed for Moosehead Mountain in the preceeding paragraph. Motorized vehicle use that would access and bisect relatively small BLM inholdings within the SWA would be expected to severely compromise the utility of big game habitats on BLM-administered lands as well as adjacent CPW holdings.

### ***Seasonal Closures***

Seasonal area closures were established for big game and sage-grouse in coordination with local CPW staff to encompass high use areas based on telemetry and experience. These areas were intended to provide day-use walking coverage from perimeter access, resulting in lower levels of use intensity and disturbance during winter use. Big game seasonal closures applied to winter use areas extend through the typical period of occupation and were considered functionally equivalent to year-round closures. Seasonal closures applied to sage-grouse reproductive activities do not extend through the entire summer use period for big game and were not evaluated as closures benefitting big game. Although these areas were wildlife-focused and increased severe winter range closures in GMU 10 and 11 by 50-100 percent, the respective acreages remain relatively small (about 2,300 and 5,400 acres) and account for 5-7 percent of each GMU's total winter range extent. No seasonal closures were proposed for GMU 21 or 22.

### ***Over the Snow Travel***

Proposed management of over the snow vehicles would preclude vehicle-related effects on wintering big game on 8 percent of big game winter ranges, including 5 percent of severe winter range and 9 percent of general winter ranges. No winter concentration areas would be subject to closure. Over the snow travel would be confined to designated routes (no exception for off-route, cross country use) on another 28 percent of winter ranges (severe winter range outside closed areas). This management strategy would limit the risk of widespread, unregulated over-the-snow vehicle use on most important winter ranges, but would tend to extend the big game impacts attributable to wheeled vehicle use unabated through the later winter and early spring months. The remaining 64 percent of winter range would be subject to unconfined cross-country over-the-snow vehicle operation at depths exceeding 18 inches. As discussed in Alternative B this management imposes a potentially intense, expansive, and unpredictable source of disturbance on wintering big game under the most challenging nutritional, physiological, and energetic demands.

### **Route Density**

In contrast to Alternatives A and D, route density prescriptions were applied in Alternative C as the means to achieve specific habitat objectives on lands being managed for vehicle use (i.e., route mileage goals not calculated on basis of all seasonal range, including vehicle closures). However, seasonal ranges managed as closed to vehicle use were integrated into subsequent habitat *impairment* calculations which are based on average route density across a GMU's entire seasonal range extent. Route density goals applied on the basis of seasonal ranges across an entire GMU (rather than managing for targeted effects on limited category lands) offsets gains afforded by more restrictive management or closures by increasing route density allowances across often extensive seasonal range *outside* such management (e.g., seasonal range outside closures or areas with more restrictive management).

Alternative C proposes use of route density (Table 2, Record 32) to mitigate ongoing impairment of big game habitat utility and extraneous energetic demands imposed on big game that are attributable to motorized and mechanized travel. Because big game use their habitat base at expansive landscape scales, manipulating the distribution and availability of vehicle travel routes at a commensurate scale is considered the only plausible means to manage dispersed vehicle use and its effects across the Planning Area. Applying restrictive vehicle use measures (e.g., closed areas) on isolated tracts of land at small relative scales (from a big game management perspective), as in Alternative B, cannot be expected to provide meaningful population-level benefits. Unless extensive and explicitly designed to capture the most important big game habitats, closures are not considered capable of reducing seasonal habitat impairment as comprehensively as route density management. Managing route density at landscape scales not only reduces the absolute extent of impairment, but provides a platform to better balance the variability of impairment between and among seasonal ranges, such that inordinately heavy influences on one seasonal range does not artificially suppress the capacity or function of complementing seasonal ranges.

Route density prescriptions proposed for Alternative C would provide for average route densities ranging from 0.9 to 1.5 mi/mi<sup>2</sup> across major GMU summer and severe winter ranges and 2.1 to 2.5 mi/mi<sup>2</sup> across their general winter range and winter concentration areas. Route densities on those portions of seasonal ranges outside More Restrictive Management Areas would generally be higher. More serious vehicle-related impairment of big game habitat attributable to implementing travel management in Alternative C would extend to 23, 26, and 39 percent of the major GMU's summer range, severe winter range, and winter range/winter concentration areas, respectively (derived from Table F14).

Implementing route density would be expected to alter the availability of routes for public use and, in most cases, reduce local route densities through abandonment, seasonal closures, or authorized use restrictions. These changes would be more prevalent in areas with higher current road densities—a circumstance most prevalent on big game summer and severe winter ranges (Table F12). Although managing for route densities of 1.5 mi/mi<sup>2</sup> on summer range and severe winter range may be perceived as a serious travel constraint, viable route networks that currently exist across relatively large tracts of the Planning Area either currently meet this target (e.g., 172 mi<sup>2</sup> in summer range in GMU 10 and East Douglas Creek ACEC in GMU 21) or are within 15 percent of meeting the target (e.g., 151 mi<sup>2</sup> in winter range/winter concentration areas in GMU 11).

Achieving route density goals proposed in Alternative C would reduce current summer range and severe winter range habitat impairment by 24 and 30 percent, respectively (derived from Tables F12 and F14). Route density goals prescribed for this alternative on general winter range and winter concentration areas would allow for increasing current route density levels and expand impairment of these ranges by 26 percent (an additional 56,270 acres of impaired habitat).

It is likely that route density management under Alternative C has the potential to stabilize or prompt important positive changes in the inherent utility of respective summer range and severe winter range habitats in the Planning Area, but this alternative persists in holding potential for further deterioration in the utility of winter range/winter concentration areas. It is uncertain whether these collective changes would be capable of contributing measurably towards enhancing the current distribution and availability of big game on public lands, more closely approaching the inherent capacity of each big game population to achieve its potential for survival, productivity and recruitment, or improving the efficacy of habitat enhancement measures by reducing behavioral constraints on the efficiency and frequency of animal use.

Travel management strategies proposed in Alternative C offer modest advantage in reducing impairment relative to Alternative D and help reduce the imbalance among impaired seasonal ranges. However, in comparing Tables F12 through F15 it is evident that reduced impairment gained by implementing route density goals on summer and severe winter ranges would be best optimized (i.e., balanced impairment among seasonal ranges) by stabilizing current route densities across the Planning Area's big game winter ranges and winter concentration areas (Table F16). Balanced management of chronic vehicle-related habitat impairment at these levels and at landscape scales would be expected to increase resilience in big game populations contending with other periodic stressors, including climatic extremes, disease and mineral development.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Alternative D would employ the same year-round closures (i.e., WSAs) as Alternative A, with the notable addition of the Moosehead Mountain closure area, which would be closed to both motorized and mechanized travel. This 9,112 acre property represents 10 percent of the summer range habitats in GMU 10 and would elevate its summer range closures from 38 to 48 percent of range extent. Allowances for camping within the Moosehead Mountain area would be similar to Alternative B and would not be expected to alter big game distribution or habitat function. Because it was determined that seasonal range route densities in this alternative were to be calculated on an overall GMU basis (in contrast to Alternative C), closures necessarily increase route density allowances on seasonal ranges outside closure areas. In this case, implementation of the proposed route density goal (1.5 mile per square mile yielding 27% impairment across GMU 10 summer range) would result in an additional 0.5 mile per square mile allowance across 52 percent of GMU 10 summer range (i.e., increasing route density from 2.4 to 2.9 miles per square mile with associated impairment increasing from 43 to 52 percent). The Oak Ridge SWA would remain closed to all forms of vehicle use.

Alternative D omits Alternative C's big game seasonal winter closures and because lands with wilderness character lands would remain open for mechanized forms of travel they would not be regarded as a form of closure with tangible big game benefit.

### ***Over the Snow Travel***

Proposed management of over the snow vehicles would preclude vehicle-related effects on wintering big game on 8 percent of big game winter ranges, including 7 percent of severe winter range and 12 percent of winter range and winter concentration areas. Over the snow travel would be confined to designated routes (no exception for off-route, cross country use) on another 30 percent of winter ranges (severe winter range and winter concentration areas outside of closed areas). Although habitat impairment attributable to over-the-snow vehicle use would be expected to decline as route density management is implemented, use of designated routes that bisect important big game winter ranges would tend to extend road-related effects into the winter season, as discussed in Alternatives A and B. The remaining 45 percent of winter range would be subject to unconfined cross-country over-the-snow vehicle operation at depths exceeding 18 inches. As discussed in Alternative B this management imposes a potentially intense, expansive, and unpredictable source of disturbance on wintering big game under the most challenging nutritional, physiological, and energetic demands.

### ***Route Density and Distribution***

Application of route density in Alternative D is envisioned to be less prescriptive than in Alternative C and route-by-route designations are expected to be more measured and judicious to emphasize equitable consideration of management objectives established for each resource. Route density prescriptions proposed for alternative D would provide for an average route density of about 1.5 mi/mi<sup>2</sup> across all GMU summer and severe winter range and 2.5 mi/mi<sup>2</sup> across all GMU general winter range and winter concentration areas. Travel management strategies on summer and severe winter range and their influence of habitat utility would remain similar to those presented in Alternative A and would generally reduce more pronounced vehicle-related impairment across 1-15 percent of the GMU's summer ranges and 7-14 percent of the GMU's severe winter range acreage (Tables F12, F13, F15). Compared to Alternative A, modest reduction in this alternative's route density for other winter range categories would be capable of reducing overall impairment from 53 to 45 percent—reducing the amount of more heavily impaired winter range across the four major GMUs by 56,690 acres.

Implementing Alternative D route density objectives on the basis of overall big game seasonal ranges would generally reduce current vehicle-related habitat impairment of GMU summer and severe winter ranges by 10 and 27 percent, respectively, but would present a situation where impairment of general winter range and winter concentration areas may increase by up to 46 percent (an additional 99,418 acres of impaired habitat). (Tables F13, F15). Alternative D has potential to suffer landscape level imbalances in impaired habitat at levels slightly reduced from Alternative A. As discussed in Alternative C, the disparity in seasonal range impairment attributable to Alternative D's collective travel management strategy would be largely rectified by managing the road network in a manner that stabilizes current route densities across the Planning Area's big game winter ranges and winter concentration areas (see last paragraph Alternative C; compare Table F12 with F15, and Table F16).

## Cumulative Effects

Use of vehicle travel networks across the Planning Area, particularly recreation-oriented travel, imposes strong behavioral consequences on the utility of big game habitat and animal energetics. These effects contribute substantially and additively to adverse behavioral responses attributable to energy-mineral development in the Planning Area. Though the area-specific intensity and duration of individual bouts of mineral-related disturbances are typically higher, the influence of recreation-based vehicle disturbance is arguably more expansive and simultaneous across all big game seasonal ranges, especially important summer and severe winter ranges. Recreation vehicle travel represents a chronically persistent and permanent and largely unregulated source of disturbance that tends to proliferate incrementally over time, and at times, involves intrusions that intentionally target more remote lands where big game can more successfully avoid exposure to disturbance and gain relative seclusion.

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### ***5.2.2. Would closed areas, seasonal closures, and route density be effective in reducing behavioral impacts to nesting habitat for greater sage-grouse and migratory birds (e.g., habitat avoidance and decreased nest attendance)?***

## Affected Environment

### ***Migratory Birds***

More than 200 species of nongame birds, including neotropical migratory species, have been documented throughout the Planning Area, of which 60 percent are breeding or resident species. Many of the more uncommon breeding species are associated with riparian, wetland, or aquatic habitats, or other habitats such as aspen or spruce fir that are of limited extent in the Planning Area, but are common within the region. Most migratory bird species return by mid to late-April and begin nesting in earnest by mid-May. Young are generally fledged by mid- to late-July.

The 2015 Proposed RMPA/Final EIS for Oil and Gas Development (Section 3.3.2.1, Table 3-20) provides a list of bird species present in the Planning Area that have been identified as being of conservation concern by BLM and the U.S. Fish and Wildlife Service (FWS). The FWS list of Birds of Conservation Concern identifies migratory and non-migratory bird species that, without conservation actions, may become candidates for listing under the Endangered Species Act (ESA).

### ***Greater Sage-Grouse***

In September 2015 the FWS announced that the greater sage-grouse was not warranted for listing under the ESA. Although not listed, the greater sage-grouse is still considered a sensitive species by the BLM.

Sage-grouse are known for their strong association with sagebrush habitat. However, they require diverse habitats during the year, and may travel long distances between seasonal ranges, depending on their availability. In general, the largest populations within the Planning Area occur in the Blue Mountain/Elk Springs and the Piceance Rim/Roan Plateau areas. The remaining habitat complexes are characterized by suboptimal or fragmented habitats that support low breeding densities. However, areas such as Wolf Creek and Crooked Wash have been documented to support hundreds of wintering birds (BLM 2007b). A detailed description of the

habitat requirements of sage-grouse as well as a discussion about populations with the Planning Area can be found in the 2015 Northwest Colorado Greater Sage-Grouse Proposed Land Use Plan Amendment/Final EIS (Section 3.3) and is hereby incorporated by reference.

CPW's mapping classifies sage-grouse ranges into two designations: priority habitat management areas (PHMA) and general habitat management areas (GHMA). PHMAs represent areas having the highest conservation value in maintaining sustainable sage-grouse populations, including breeding, later brood-rearing, and winter concentration areas. There are approximately 122,000 acres of mapped PHMAs in the Planning Area. GHMAs represent occupied habitats that are outside priority habitat and there are approximately 175,500 acres of within the Planning Area.

## **Impacts Common to All Alternatives**

### ***Migratory Birds***

Several studies specific to migratory birds have shown a wide-range of deleterious direct, indirect and cumulative effects from roads and road networks (Kociolek et al. 2011; Inglefinger and Anderson 2004; McClure et al. 2013, Mutter et al. 2015). Direct impacts to migratory birds include habitat loss or modification associated with construction of new roads and trails, vehicle caused mortality, pollution and poisoning, and destruction of nests or burrows, often associated with off-road travel. Indirectly, roads may pose a physical barrier to certain species. Noise and activity associated with vehicle traffic has been shown to have the most widespread indirect effect on birds through avoidance of otherwise functional habitats, reductions in breeding success and species richness, as well as other physiological impacts. Several studies have shown evidence of strongly reduced population densities of many species in areas adjacent to well-traveled roads (Reijnen et al. 1997, Patricelli and Blickley 2012, Mutter et al. 2015, Inglefinger and Anderson 2004). Reijen and Foppen (2006) showed that chronic traffic noise can alter population age structure and population densities in several avian species. Barton and Holmes (2007) found daily nest abandonment rates were four times higher and daily nest desertion rates were substantially greater within 330 ft (100 m) of OHV trails however they were unable to determine what aspect of OHV use influenced abandonment. Similarly, Inglefinger and Anderson 2004 found the nesting density of sagebrush-associated birds was reduced by 40 to 60 percent within 330 feet (100 m) of roads accessing natural gas fields in Wyoming with as few as 10 vehicle trips per day.

Most birds rely on acoustic communication which can be constrained or masked by excessive traffic noise. Although the response is species-specific, many bird species tend to avoid siting nests in close proximity to disturbance and noise effects may extend further depending upon cover type, with forested habitats absorbing sound better than more open habitats, such as grassland or sagebrush communities (Forman et al. 2002). For example, Mutter et al. (2015) found that increasing road density negatively affected the occupancy rates of sagebrush sparrow and sage thrasher (both sagebrush obligate species) at the landscape-scale. Similarly, Gilbert and Chalfoun (2011) showed a decrease in sagebrush songbird density adjacent to natural gas development roads.

### **Greater Sage-Grouse**

Roads and road networks elicit aversion behavior in sage-grouse, which is in part related to noise. Roads may influence populations differently based on traffic volumes, proximity to leks or important seasonal habitats, road type, and intervening topography (Carpenter et al. 2010).

Many attributes of road networks (i.e., road density, frequency of use, and timing of use) appear to adversely influence sage-grouse populations (Holloran 2005, Wyoming Wildlife Consultants 2009). Holloran (2005) found road densities that exceeded 0.7 miles per square mile within 2 miles of a lek caused progressive declines in average annual lek attendance. Birds less consistently avoided producing pads that incorporated fluids gathering systems, which implies that sage-grouse may also be sensitive to the frequency of vehicle use (Wyoming Wildlife Consultants 2009). On leks within 1 mile of main access roads, male attendance declined 35 percent when used early in the morning during the strutting period, but declined by 11 percent in the absence of traffic (Holloran 2005). Although Walker et al. (2007) suggests that seldom-used two-tracks do not appear to influence lek persistence, the results from Carpenter et al. (2010) implied that wintering sage-grouse are half as likely to select habitat within 990-1,320 feet of two-track trails—a response that represents a substantial indirect form of habitat loss. Lyon and Anderson (2003) found 75 percent of hens associated with a roadside lek selected nest sites greater than 1.8 miles from the lek, compared to 9 percent of hens associated with undisturbed leks. This level of avoidance translates to a 73 percent reduction in the utility of nesting habitat within nearly 2 miles of roads bearing relatively light (less than 12 vehicle trips/day) use. Roads had an indiscernible influence on male lek attendance at distances exceeding 1.6 miles. Most sage-grouse research has used various measures of lek use to infer population responses in sage-grouse subjected to development-related disturbances. Without exception, this work documents increased rates of lek inactivity and declining male attendance in response to increased frequency (vehicle use), intensity (well density), duration, and proximity of development activity and infrastructure (Doherty 2008; Lyon and Anderson 2003; Walker et al. 2007; Harju et al. 2010; Holloran 2005).

### Non-motorized Impacts

Recreational use has been shown to cause behavioral and physiological impacts to wildlife, including many bird species. Physiological impacts can include changes in heart rate and body temperature, while behavioral responses can include changes in movement patterns, vigilance, and foraging. In a review of impacts from nature based recreation (running, walking, cycling, hiking etc.), Steven et al. (2011) found that 61 of the 69 studies (88 percent) showed some type of negative effect (either behaviorally, reproductively or physiologically) on birds. Only one paper (one percent) showed a positive effect, with the remaining seven (10 percent) showing no effect.

Similarly, in a review of scientific literature, Larson et al. (2016) found that non-consumptive forms of recreation had an overwhelmingly negative influence on wildlife (e.g., 93 percent had at least one effect), with some species (e.g., ungulates and raptors) showing more pronounced effects. Additionally they found that non-motorized activities showed more evidence for a negative response than motorized. Specific to birds, impacts were largely negative, with the exception of corvids. Twenty-four percent of the articles reviewed were specific to cycling/biking and of these roughly 50 percent showed a statistically significant negative effect.

## **Alternative A (No Action Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Under Alternative A, 100,200 acres (approximately seven percent of planning area) are currently closed to motorized travel. Of this acreage roughly 79,900 acres, associated solely with WSAs, are closed to mechanized travel as well. These existing closures likely provide for limited and localized reductions in vehicle and road-related effects on migratory birds throughout the year.

Currently, 1,005 acres (one percent) of PHMA and 2,005 acres (one percent) of GHMA (associated exclusively with the Willow Creek and Skull Creek WSAs) are closed to motorized and mechanized travel. The Moosehead Mountain ACEC (five percent PHMA and one percent GHMA) is closed to motorized vehicle travel. These closed areas are located on the periphery of the most continuous sage-grouse habitat in the Planning Area and likely provide for small, localized reductions in vehicle and road-related effects on grouse throughout the year.

### ***Seasonal Closures***

Approximately 21,800 acres are seasonally closed to motorized travel. These closures are largely enforced outside of the migratory bird breeding season (August through April), when motorized travel does not have as great of an influence on migratory birds and their reproductive success. As such, these seasonal closures likely provide only minimal and localized benefits to most migratory bird species.

### ***Over the Snow Travel***

Unrestricted over the snow travel throughout the majority of the Planning Area would not be expected to have a substantial influence on migratory birds as most bird species do not overwinter within the Planning Area. Short-term displacement of wintering birds would be expected, however this would not have any marked influence at the local or population level.

Over the snow travel would be closed in five percent of PHMA and three percent of GHMA associated with WSAs and the Moosehead Mountain ACEC. The remainder of sage-grouse habitat would be subject to unrestricted cross-country over the snow travel. This management strategy would allow for more pervasive and widespread impacts and would be expected to result in the disruption to large flocks of wintering birds which can lead to increases in physiological stress to birds during the critical winter period as well as other impacts associated with noise and human activity.

### ***Current Conditions***

Existing miles of routes on BLM managed lands are provided in Table F1. Based on these calculations up to 388,100 acres of migratory bird habitat may potentially be influenced by road-related effects as described above.

Current route densities within greater sage-grouse habitat, which area broken down by sub-area, are listed in Table F8. For the purposes of this analysis, only the Blue Mountain, Wolf Creek and PPR sub-area are discussed in detail across each alternative, as these areas represent large tracts of higher quality sagebrush communities/areas with important breeding and brood-rearing habitat that support higher grouse numbers within the Planning Area. Should Alternative A be implemented, overall route density prescriptions of 1.5 mi/mi<sup>2</sup> would be applied to big game summer range and severe winter range and 3.0 mi/mi<sup>2</sup> would be applied to big game general



winter range and winter concentration areas. Additionally, a 1.5 mi/mi<sup>2</sup> route density prescription would be applied to black-footed ferret management areas and the East Douglas ACEC. With the application of these route density prescriptions, the potential overall route density in the Blue Mountain, Wolf Creek and PPR sub-areas within two miles of a lek could be up to 2.5 mi/mi<sup>2</sup>, 1.6 mi/mi<sup>2</sup>, and 1.9 mi/mi<sup>2</sup>, respectively. This represents an up to 19 percent increase in route densities in the Blue Mountain sub-area, and a minimum six and 32 percent decrease in route densities in the Wolf Creek and PPR sub-areas from current conditions. Within PHMA/GHMA, potential overall route density in the Blue Mountain, Wolf Creek and PPR sub-areas could be up to 2.5 mi/mi<sup>2</sup>, 1.7 mi/mi<sup>2</sup>, and 2.2 mi/mi<sup>2</sup>, respectively, which represents an increase in up to 12 percent in route density in the Blue Mountain sub-area, and a minimum 11, and 19 percent reduction in route density in the Wolf Creek and PPR sub-areas from existing conditions. Table F9 lists the potential overall route densities for each sage-grouse sub-area. Impacts associated with vehicle and road-related influences would vary depending on sub-area, as the existing route densities in some sub-areas are lower than those prescribed.

## **Alternative B – Direct and Indirect Effects**

### ***Closed Areas***

Approximately 441,800 acres (29 percent of the Planning Area) would be closed to motorized travel. With the exception of the WSAs (79,900 acres), all would be open to mechanized travel. Roughly 298,850 acres are associated with lands with wilderness characteristics. Although these areas represent roughly 68 percent of closed acreage, eliminating vehicle use on routes within these closures would only reduce the amount of acres of migratory bird habitat potentially influenced by vehicle-related effects by 10 percent from current conditions. This is attributed to the fact that lands with wilderness characteristics were delineated largely because they contained few, if any roads and were absent of any anthropogenic features.

Under Alternative B, approximately 20,502 acres (17 percent of PHMA) would be closed to motorized travel. Roughly 6,925 acres (six percent) are closures associated with existing WSAs (1,005 acres also closed to mechanized travel) and the Moosehead Mountain ACEC. The additional acreage is largely attributed to five lands with wilderness characteristics units (Galloway Gulch, Pinto Gulch, MF Mountain, Lower Wolf Creek, and Moosehead Mountain) and the Indian Valley area closure. Although addition of the lands with wilderness characteristics areas nearly triples the amount of PHMA closed to motorized travel compared with Alternative A, these areas were not delineated with important sage-grouse habitat in mind. Because of this, they indiscriminately capture relatively small, isolated parcels of PHMA. Several of these areas including Galloway Gulch (2,580 acres PHMA), Indian Valley (1,422 acres PHMA), and Moosehead Mountain (1,405 acres PHMA) are currently not accessible to the public by vehicles due to adjacent private lands. MF Mountain involves 1,791 acres of PHMA and while this may provide a benefit to a certain degree, the acreage is on the periphery of mapped PHMA and has never been documented as an area that supports a large number of birds. Of the six new areas identified for closure to motorized vehicles, Lower Wolf Creek would have the most potential to provide a benefit to sage-grouse. This closed area lies within four miles of the largest lek on in the Planning Area. The potential closure would exclude motorized vehicle traffic on roughly 15 miles of interior roads on 5,622 acres (five percent of PHMA in the Planning Area, but 39 percent in the Wolf Creek sub-area). Excluding vehicle traffic year-round would be expected to benefit sage-grouse by eliminating both direct and indirect vehicle-related effects and allow for

larger areas/tracts of unimpaired sagebrush communities. Benefits associated with eliminating vehicle traffic would likely be most evident during the reproductive period but would certainly provide a benefit to wintering birds as this closure would apply to over the snow travel as well. Approximately 35,965 acres (20 percent) of GHMA would be closed to motorized vehicle travel. Roughly 3,623 acres (two percent) are associated with existing WSAs and the Moosehead Mountain ACEC. The additional acreage (~32,633 acres) is generally associated with lands with wilderness characteristics units. Although this represents a tenfold increase in the amount of GHMA currently closed to motorized travel, it has little biological importance as these parcels are widely separated and isolated from PHMA and not associated with important breeding/brood-rearing or winter use areas. In general, these closures only capture peripheral portions of mapped range which would continue to be subject to road-related influences associated with vehicle travel along the boundaries of the lands with wilderness characteristics units. In most cases these areas have not supported grouse in several decades and it is unlikely these areas closures would provide a meaningful benefit to sage-grouse. The sole exception would be the Big Ridge area. This 2,034 acre parcel of GHMA located within the lands with wilderness characteristics unit supports a small (five bird) lek. Although there would still be road-related influence associated with vehicle use along the boundary of the lands with wilderness characteristics unit, it would eliminate vehicle use on a series of road networks which pass within close proximity to the lek.

While eliminating motorized travel would undoubtedly provide a benefit to migratory birds and grouse (at a localized scale), mechanized travel will still be permitted in all areas outside of the existing WSAs. Because non-motorized forms of recreation have been shown to negatively influence avian wildlife species as discussed above, impacts to both migratory birds and sage-grouse would be expected, but potentially at reduced levels, particularly if these areas receive only limited mechanized use, than those associated with motorize travel. Although it would be difficult to quantify at this time as the WRFO has limited information on non-motorized recreational use in the Planning Area, these impacts cannot be discounted. The degree of impact would greatly depend on intensity and frequency of use, time of year, habitat type, and species-specific responses.

Modification of the Moosehead Mountain closed area boundary to allow for camping on the west side would not be expected to have any measureable influence on sage-grouse or migratory birds. This 37 acre parcel, which lies within 150 – 200 m from a paved road, does not provide any important habitat features for sage-grouse or migratory birds. Currently, this parcel is influenced on the southern end by an existing (abandoned) well pad and road network.

### ***Over the Snow Travel***

Impacts to migratory birds associated with over-snow motorized travel would be similar to those discussed under Alternative A.

Over the snow travel closures associated with lands with wilderness characteristics would nearly triple the amount of PHMA closed to motorized travel compared with Alternative A. Impacts associated with eliminating motorized vehicle travel reduce the physiological and behavior impacts throughout the critical winter period. The remainder of PHMA (~101,519 acres) would be limited to designated routes. Confining snowmobile use to designated routes would reduce the potential for encountering and disrupting flocks of wintering birds. Although impacts would still

be anticipated, they would be far more localized compared with unrestricted cross-country travel under Alternative A. Cross-country over the snow use would be permitted in GHMA providing there is at least 18 inches of snow cover. Impacts are expected to be similar to those discussed under Alternative A.

### ***Route Density***

Route density is not included as a management tool in Alternative B. However, since Alternative B has the most expansive closed areas, route density estimates were calculated for Alternative B in order to provide a comparison to the other alternatives and to determine if the closed areas made substantial reductions in overall route density within the Blue Mountain, Wolf Creek, and Piceance-Parachute-Roan (PPR) sub areas. Motorized vehicle closures associated with lands with wilderness characteristics would only provide for modest reductions in overall route densities in these areas (e.g., 0.1 – 0.2 mi/mi<sup>2</sup>). It should be noted that these areas would remain open to mechanized travel which is likely to persist in contributing to avoidance behavior for both grouse and migratory birds (see discussion above).

## **Alternative C – Direct and Indirect Effects**

### ***Closed Areas***

Motorized and mechanized travel would be closed on approximately 79,900 acres of migratory bird habitat associated with existing WSAs. The Moosehead Mountain ACEC, riverine parcels and parcels adjacent to the White River National Forest would be closed to motorized travel, but would be open to mechanized travel. Direct and indirect impacts to sage-grouse and migratory birds would be similar to those discussed for closed areas under Alternative A.

Although the Moosehead Mountain ACEC would remain closed to motorized use under this alternative, it would allow for vehicle access to the Turner Creek pond, via a “cherry-stemmed” road. While direct involvement with priority grouse habitat would be minimal (roughly 650 meters of road traverses PHMA), the indirect impacts associated with vehicle and recreational use (noise and human activity) would be far more pervasive. Facilitated by more open terrain, there is a strong likelihood that once access is provided into the interior of the ACEC, vehicle use will extend beyond the designated route. Intrusion into this large tract of PHMA (roughly 5,920 acres), particularly along perennial drainages during the late spring and summer months, which is coincident with nesting and brood-rearing periods, would be expected to negatively impact both sage-grouse and sagebrush/riparian obligate migratory birds species, as well as big game (see Section 5.2.1).

Allowing motorized and mechanized vehicle use within the Oak Ridge SWA would be expected to increase the direct and indirect impacts, particularly to mountain shrub obligate species, but at an extremely localized level.

### ***Seasonal Closures***

Seasonal area closures established on big game severe winter ranges (~25,643 acres) would not be expected to provide a substantial benefit to migratory birds. These closures would occur from October 1 through April 30, largely outside of the migratory bird reproductive period. Seasonal area closures established for greater sage-grouse, which would exclude motorized and mechanized travel from March 1 – July 15 would be imposed on important sage-grouse breeding

and nesting habitat (21,195 acres). This would be expected to benefit migratory birds as this closure is largely synchronous with the migratory nesting period. Excluding motorized and mechanized travel prior to and throughout the breeding season would reduce the direct and indirect impacts described above. Because this closure predominately involves sagebrush communities, it would be expected to provide a greater benefit to sagebrush obligate species such as Brewer's sparrow, sagebrush sparrow, sage thrasher, and vesper sparrow.

Seasonal closures established in coordination with local CPW staff would be applied to motorized and mechanized travel from March 1 to July 15 in six areas (Table 1, Record 9) totaling 21,195 acres (17 percent of PHMA in the Planning Area). These parcels, which are nearly all confined to the Blue Mountain/Wolf Creek populations, encompass a portion of the most continuous, intact sagebrush communities in the Planning Area. Lek densities are typically higher than other areas (e.g., Magnolia and Meeker) and subsequently support greater numbers of grouse. Because these areas involve larger, continuous tracts of PHMA and were delineated with important breeding/early brood-rearing habitat in mind, impacts associated with eliminating motorized and mechanized travel would be expected to provide a greater benefit to grouse than the majority of area closures described in Alternative B (e.g., lands with wilderness characteristics units). Seasonal closures would be expected to markedly reduce road-related impacts, however this would be confined to the reproductive period only. Direct and indirect impacts associated with motorized and mechanized travel would be expected throughout the late-brood rearing and winter periods depending on frequency and intensity of use.

The proposed Blacks Gulch seasonal closure established for wintering big game (October 1 – April 30) would provide an unintended benefit to wintering and lekking sage-grouse. This closure area encompasses 1,962 acres of GHMA that supports a small (2-5 bird) lek. This area has historically and recently been shown to support birds throughout the fall and early spring months. Eliminating motorized and mechanized travel during this timeframe would be expected to reduce road-related impacts. This benefit would be extremely localized and would not be expected to provide any benefit to grouse at the population level, nor would it reduce vehicle-related impacts during the nesting and brood-rearing periods.

### ***Over the Snow Travel***

Impacts to migratory birds associated with over-snow motorized travel would be similar to those discussed under Alternative A.

Over the snow travel would be limited to primitive routes in lands with wilderness characteristics and limited to designated routes in PHMA. Impacts to sage-grouse associated with limiting over the snow travel to primitive/designated routes would be similar to those discussed under Alternative B.

### ***Route Density***

Alternative C proposes to use route density goals to manage road-related impacts to sage-grouse and retain larger tracts of sagebrush communities that are relatively uninfluenced by the direct and indirect impacts of roads. It is assumed that habitat impaired is commensurate with the reductions in route densities. Route density prescriptions of 1.0 mi/mi<sup>2</sup> within two miles of leks, and 1.5 mi/mi<sup>2</sup> within PHMA and GHMA would be the long-term goal in these important sage-grouse habitats. In terms of effects to sage-grouse, seasonal area closures would be an effective

management strategy to eliminate road-related influences throughout the reproductive period. When considered collectively, these travel management measures would reduce effective road-related influences to levels effectively equivalent to route densities described below. After considering how much of each of these components contributes to overall sage-grouse the overall route density for all sage-grouse habitat during the breeding season for the Blue Mountain, Wolf Creek, and PPR areas would be 1.1 mi/mi<sup>2</sup>, 1.1 mi/mi<sup>2</sup>, and 1.2 mi/mi<sup>2</sup>, respectively. This represents reductions in effective route density of 50 percent, 42 percent, and 56 percent from current route density for these populations. For the Blue Mountain and Wolf Creek populations, effective route densities would be higher outside of the breeding season as seasonal area limitations would not reduce impacts to sage-grouse during other times of the year (e.g., winter use). The overall route density for all sage-grouse habitat (outside of the seasonal closure) for the Blue Mountain and Wolf Creek populations would be 1.3 mi/mi<sup>2</sup> for both areas, which constitutes reductions of 41 percent and 32 percent, respectively, from current route density. There would be no difference in route densities during and outside of the nesting/breeding season for the PPR population due to the small acreage associated with the seasonal closure. Table 10 shows the route densities for each grouse sub-area.

In order to achieve the target route densities, the BLM would need to consider closing routes, limiting routes to administrative use only, or applying seasonal restrictions during development of travel management plans. While seasonal restrictions (assumed to match the timeframes of the seasonal area closures) would address route density effects during the reproductive period, only year-round closures would ensure that route density targets are achieved during the winter when grouse may also be using these habitats.

The application of route density prescriptions as described in Alternative C would be expected to also reduce direct and indirect impacts to most migratory bird species. This would largely depend on habitats involved and the prescriptions applied, however in general, reducing route density would allow for larger tracts of habitat that are essentially unaffected by road-related influences.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Under Alternative D, 197,900 acres would be closed to motorized travel, which nearly doubles the amount of closed areas compared with Alternative A. Eliminating motorized vehicle travel in these areas would not result in a substantial decrease in the amount of acreage exposed to vehicle-related impacts to migratory birds (roughly only a two percent decrease from Alternative A), due largely to the limited road networks in the areas identified for closure. As discussed in Alternative B, mechanized travel would be permitted in all areas with the exception of the WSAs, the Moosehead Mountain ACEC, Oak Ridge SWA, and riverine parcels (~90,737 acres). Eliminating both motorized and mechanized use would provide for extremely localized benefits to migratory birds. As such, impacts to migratory birds would be similar to those discussed in Alternative A.

Approximately 6,925 acres (five percent) of PHMA would be closed to motorized and mechanized travel. This more than quadruples the amount of PHMA closed to motorized/mechanized use from Alternative A. Eliminating motorized and mechanized use in the Moosehead Mountain ACEC would provide a localized benefit (e.g., confined solely to the Blue

Mountain sub-area) and complement existing management strategies applied to the adjoining WSAs. The remaining closures associated with the Pinto Gulch and North Colorow lands with wilderness characteristics account for minimal acreage (628 acres of PHMA). These closures would not be expected to provide a substantial benefit to grouse.

Motorized travel would be limited to either primitive or designated routes in the remainder of the Planning Area. This could potentially influence up to 379,463 acres of habitat that may support migratory birds. Impacts would be similar to those discussed under Alternative A.

The change in management to primitive or designated routes would affect 7,496 acres of PHMA, nearly all of which is associated with the Lower Wolf Creek lands with wilderness characteristics unit. Direct and indirect impacts are expected to be similar to those discussed in Alternative A, however limiting use to primitive or designated routes is considered to be a marked improvement from management strategies of limiting travel to existing routes. There is likely no difference in impacts between use of designated vs. primitive routes, but because primitive routes are generally maintained through use and not by mechanical means, there may be greater opportunity for unforeseen resource damage in an attempt to circumvent sections of routes should they become impassable.

Lands with wilderness characteristics would continue to be open to mechanized travel. Impacts would be similar to those discussed under Alternative B.

### ***Seasonal Closures***

There would be no seasonal closures for sage-grouse under this alternative.

### ***Over the Snow Travel***

Impacts to migratory birds associated with over-snow motorized travel would be similar to those discussed under Alternative A. Over the snow travel would be closed on seven percent and limited to designated routes on eight percent of PHMA. Impacts to sage-grouse associated with over the snow travel would be similar to those discussed under Alternative A.

### ***Route Density***

There would be no route density prescriptions specific to greater sage-grouse under this alternative. Instead areas within two miles of a lek and PHMA and GHMA would be managed at the default big game route density specific to each range (e.g., overall route densities of 1.5 mi/mi<sup>2</sup> for summer and severe winter ranges, and overall route density of 2.5 mi/mi<sup>2</sup> for winter and winter concentration areas). With the application of the default big game route densities, the potential overall route density in the Blue Mountain, Wolf Creek and PPR sub-areas within two miles of a lek could be up to 2.7 mi/mi<sup>2</sup>, 1.6 mi/mi<sup>2</sup>, and 1.8 mi/mi<sup>2</sup>, respectively. This represents an increase in overall route density of up to 29 percent in the Blue Mountain sub-area, and a minimum six and 33 percent decrease from current route densities in the Wolf Creek and PPR sub-areas. Within PHMA/GHMA, potential overall route densities for the Blue Mountain, Wolf Creek, and PPR sub-areas could be up to 2.3 mi/mi<sup>2</sup>, 1.6 mi/mi<sup>2</sup>, and 2.0 mi/mi<sup>2</sup>. This represents an increase in overall route density of up to five percent in the Blue Mountain sub-area, and a minimum 16 and 26 percent decrease in the Wolf Creek and PPR sub-areas from current route densities. Table F11 lists the potential overall route densities for each sub-area.

Impacts associated with vehicle and road-related influences would vary depending on sub-area, as the existing route densities in some sub-areas are lower than those prescribed.

## **Cumulative Effects**

Past and present management actions that have the potential to influence sage-grouse/migratory bird populations or contribute to habitat modification or degradation include oil and gas development, livestock grazing, recreational activities, wildland fires, and rights-of-way authorizations. There has been very limited oil and gas development in the Blue Mountain or Wolf Creek areas, with little reason to believe that this would change drastically in the coming years. The PPR and Magnolia areas have been locally influenced by oil and gas activity within the past 10-15 years and this is expected to continue into the foreseeable future. Large transmission lines which are scheduled to be constructed within the Wolf Creek area can serve as perches for raptors and would be expected to negatively influence sage-grouse. Livestock grazing occurs on the majority of BLM-administered lands. Reductions in herbaceous cover, particularly during the nesting season, have the potential to influence grouse and migratory birds.

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### ***5.2.3. Would closed areas, seasonal closures, and route density be effective in reducing impacts to special status animal species such as Canada lynx and white-tailed prairie dogs and associated wildlife species?***

## **Affected Environment**

### ***White-tailed Prairie Dogs and Associated Wildlife Species***

White-tailed prairie dogs occur primarily in the salt desert shrubland and lowland grassland along US 40 from Pinyon Ridge to the Utah border, in the Coal Oil Basin northwest of Rangely and the Crooked Wash area. Their towns, presently occupying about 39,000 acres in the Planning Area, provide habitat for other special status species, including black-footed ferret, ferruginous hawk, and burrowing owl. White-tailed prairie dogs are susceptible to campestral (sylvatic) plague, which periodically decimates their populations, and is the most important factor currently affecting their abundance and distribution (Pauli et al. 2006).

Reintroduced ferrets and their offspring in northwestern Colorado are designated as a nonessential experimental population. Two ferret management areas have been designated for reintroduction efforts. The Wolf Creek Management Area (WCMA) occupies about 81 square miles, covers about half of the white-tailed prairie dog colonies within the Planning Area, and is part of a larger complex of prairie dog towns that extends along US 40 into Utah. The Coyote Basin management area occupies about 10 square miles in extreme western Rio Blanco County, and is intended to complement reintroduction efforts in the primary management zone in the adjoining part of Utah.

### ***Canada Lynx***

Canada lynx are listed as a federally threatened species under the ESA. Lynx habitat occurs at high elevations and is almost exclusively found on U.S. Forest Service managed lands within the Planning Area. Approximately 2,500 acres of potential lynx habitat are managed by the BLM, compared to the average home range in Colorado of more than 100,000 acres. These are small,

isolated parcels ranging in size from 3 to 2,300 acres; with the average size around 500 acres. Based on observations of dispersing lynx, individuals may occur occasionally in the Planning Area, but there is little suitable denning or winter habitat on the largely diminutive and widely separated parcels of BLM land east of State Highway 13. Approximately 1,720 acres occurs within the North Fork of the White River Lynx Analysis Unit (LAU). None of the remaining acreage is associated with an LAU. Although Canada lynx are known to have traversed and made short-term use of lands outside the defined LAU, lynx management is intended to apply to better-suited habitats within designated LAUs.

More detailed descriptions about the occurrence of Canada lynx and prairie dogs and associated wildlife species in the Planning Area can be found in the 2015 Proposed RMPA/Final EIS for Oil and Gas Development (Sections 3.3.3.1 and 3.3.3.2) and is hereby incorporated by reference

## **Impacts Common to All Alternatives**

### ***White-tailed Prairie Dogs and Associated Wildlife Species***

Roads and road networks in the ferret recovery areas increase exposure of prairie dog colonies to recreational shooting disturbance. Gordon et al. (2003) found that shooting pressure was greatest at colonies with easy road access as compared to more remote colonies. Impacts of recreational shooting include direct mortality of targeted prairie dogs as well as a suite of indirect impacts. Studies on black-tailed prairie dog colonies have shown that exposure to recreational shooting can alter behavioral patterns leading to increased vigilance and decreases in foraging rates. This can negatively affect body condition, reproductive success due to removal of pregnant females and young of the year, as well other physiological conditions (Knowles 1988, Stockrahm and Seabloom 1988, Vosburgh and Irby 1998, Buskirk and Pauli 2003). Many of these studies involve black-tailed prairie dogs, which exhibit different life history strategies and habitat requirements than white-tailed prairie dogs. White-tailed prairie dogs often occur in lower densities in areas with greater vegetative cover (Tileston and Lechleitner 1966). Because of this, shooting intensity may be lower on white-tailed prairie dog colonies, but likely varies depending on colony size/density and accessibility (road access). In areas with more frequent/consistent exposure to recreational shooting, shooting has the potential to reduce prairie dog densities and slow recovery rates, particularly if colonies are currently impacted by plague or other types of disturbance (Seglund and Schnurr 2010). Although limited information exists, noise effects have been shown to result in increased vigilance and a reduction in foraging and above ground activity of prairie dogs (Shannon et al. 2014). Road and road networks also contribute to the spread of noxious and invasive weeds which can reduce habitat quality.

In the context of ferret recovery, the capacity of any given area to support ferrets is contingent on the extent and abundance of prairie dogs. Route density limitations of 1.5 mi/sq. mi that were established in the Wolf Creek/Coyote Basin Ferret Management Plans were intended to stabilize existing route density within the ferret management areas, which had the effect of limiting the amount of prairie dog habitat exposed to shooting pressure within 300 meters from a road to approximately 30 percent. In certain instances, localized shooting activity can substantially reduce the abundance of the prairie dog prey source in the immediate vicinity of a ferret litter, reducing that litter's prospects for survival from the nutritional standpoint and, with the need to search more widely for prey, increased above-ground exposure to predation.



### **Canada Lynx**

Several anthropogenic influences have been shown to influence lynx and lynx habitat (climate change, vegetation management etc.). For purposes of this EA, discussion will be limited to those influences relevant to travel management, namely forest/backcountry roads/road networks and recreational activities (e.g., over the snow travel). Based on the Canada Lynx Conservation and Assessment Strategy (2013), the above two influences were determined to have less of an influence on lynx and lynx habitat as other anthropogenic influences. Lynx can react differently to these influences and responses are often times highly variable depending on the individual. Several studies have shown that backcountry or lightly-travelled gravel roads were not avoided by lynx or had little influence on seasonal resource selection patterns (McKelvey et al. 2000, Squires et al. 2010) and lynx may even use these routes to their advantage (Moen et al. 2010). In contrast, Fueller et al. (2007) found that lynx selected against roads and their associated edges. Squires et al. (2010) found lynx dens were farther removed from roads compared to expected, however this may have been a function of route density/distribution across the landscape. Roads can also provide human access for illegal trapping or shooting, both of which are considered a greater influence.

There is limited information regarding how lynx react to recreational activities. Several studies (Bunnell et al. 2006, Kolbe et al. 2007, Burghardt-Dowd 2010) have investigated whether compacted snow trails provided travel corridors for potential predators or competitors of lynx, with mixed results. Differences in snow depth and condition across geographic areas of these studies (Montana, Wyoming, and Utah) may be a factor in influencing/facilitating coyote movements within lynx habitat.

### **Alternative A (No Action Alt) – Direct and Indirect Effects**

Currently there are no areas closed to motorized travel in either of the ferret management areas or in areas that potentially support lynx.

#### ***Over the Snow Travel***

Both ferret management areas are currently open to unregulated cross-country over the snow travel. In general, all age classes of prairie dogs would be hibernating throughout the winter months (November – March), however there may be potential for above ground activity either extending later or occurring prior to these timeframes. In contrast, ferrets remain active year-round. Although predominantly nocturnal, ferrets have been documented hunting during daylight hours (Eads et al. 2010). Although at present there is little over the snow vehicle traffic in the ferret management areas, this alternative has no means to limit or regulate future use. Continued allowances for unrestricted snowmobile use may increase the potential to encounter and harass these species. Intense noise and activity, particularly during the winter months can interfere with efficient use of fat reserves necessary for winter survival.

Currently there are no restrictions on over the snow travel in lynx habitat. Although the BLM administers very little potential lynx habitat, unregulated cross-country snowmobile use would be expected to sustain or increase impacts to lynx.

#### ***Route Density***

Under current management, motorized vehicle travel is limited to existing routes in the black-footed ferret management areas (49,639 acres), with route density not to exceed 1.5 mi/mi<sup>2</sup>.

Current route density is 1.9 mi/mi<sup>2</sup> in the WCMA (44,793 acres) and 2.7 mi/mi<sup>2</sup> in the CBMA (4,846 acres) (Appendix F, Table F6). Although route density was established as a habitat management strategy in the 1997 RMP, it has yet to be implemented through the development of Travel Management Plans (route designations). Based on existing route density and distribution established through the most recent route inventory, it is thought that approximately 10,241 acres of prairie dog colonies in the WCMA and 727 acres in the CBMA are exposed to vehicle and road-related influences.

Should Alternative A be implemented and a 1.5 mi/mi<sup>2</sup> route density prescription be applied to the ferret management areas, the overall route densities in Wolf Creek and Coyote Basin Ferret Management areas would decrease by 21 and 44 percent, respectively. At this time, it would be impossible to determine the amount of prairie dog habit that may potentially be exposed to vehicle and road-related influences, as specific routes have not been identified for road decommission, however, it would likely be commensurate with the reductions discussed above.

## **Alternative B – Direct and Indirect Effects**

### ***Closed Areas***

Approximately 20,074 acres (or 45 percent) of the WCMA and 515 acres (11 percent) of the CBMA would be closed to motorized vehicle use. These closures are associated solely with four lands with wilderness characteristics units. The Raven Ridge unit overlaps with a linear band of habitat along the eastern edge of the CBMA that contains two short road segments, each less than 0.40 miles in length. This closure area would not be expected to have a measureable influence on ferrets, prairie dogs or associated species as it would provide no reduction in the amount of habitat that is currently exposed to road-related influences. The remainder of the management area would still be subject to vehicle and road-related influences. In contrast, the Lower Wolf Creek and portions of the MF Mountain and Coal Ridge units are located within the WCMA. Eliminating motorized vehicle use within these closures would reduce the amount of habitat exposed to road-related influences to approximately 7,811 acres, a 24 percent decrease from current conditions. Direct and indirect vehicle and road-related impacts are expected to decrease under this alternative.

Roughly 1,202 acres of mapped prairie dog colonies are located within the Indian Valley closed area. Presently, this area is not accessible to the public due to intermixed private lands, therefore this closure is unlikely to provide any greater benefit to prairie dogs and associates than what is currently in place.

Approximately 1,984 acres (46 percent) of potential lynx habitat would be closed to motorized travel. Of this acreage approximately 1,115 acres are associated with the North Fork of the White River LAU. These closure areas are represented by five small, discrete parcels ranging in size from 155 – 798 acres. Although these parcels may be used by lynx for opportunistic foraging and or movement/dispersal, they are generally small and disconnected from large tracts of suitable habitat or do not provide habitat capable of sustaining lynx or snowshoe hare (primary prey) for any extended period of time.

### ***Over the Snow Travel***

Over the snow travel designations which would be applied to 95 percent of the WCMA (closed in lands with wilderness characteristics units [45 percent] and limited to designated routes on

22,284 acres of PHMA [50 percent] in the WCMA) would be expected to substantially reduce the amount of habitat currently exposed to motorized vehicle influences during the winter months. Eliminating snowmobile use or limiting travel to designated routes would reduce the potential to encounter/harassment of above ground ferrets or prairie dogs. The remaining five percent of the WCMA would be open for cross-country over the snow travel, providing there is at least 18 inches of snow cover. There would be almost no difference in impacts in the CBMA than current conditions (Alternative A), as the lands with wilderness characteristics closure does not reduce the amount of habitat exposed to road or vehicle-related influence. The remaining 89 percent would still be subject to over the snow vehicle travel as long as there is an 18 inch snow base. Impacts are expected to be similar to those discussed under Alternative A.

Eliminating motorized vehicle use and limiting over the snow travel to designated routes in Canada lynx habitat would be consistent with conservation measures and management recommendations established in the Canada Lynx Conservation Assessment and Strategy (Interagency Lynx Biology Team 2013). Future travel management decisions would strive to be compatible with travel management policies on adjoining Forest Service managed lands.

### ***Route Density***

Route density is not included as a management tool in Alternative B. However, since Alternative B has the most expansive closed areas, route density estimates were calculated for Alternative B in order to provide a comparison to the other alternatives and to determine if the closed areas made substantial reductions in overall route density in the ferret management areas. For Alternative B, route density in the WCMA and CBMA are estimated at 1.5 mi/mi<sup>2</sup> and 2.7 mi/mi<sup>2</sup>, respectively. Motorized vehicle closures associated with lands with wilderness characteristics in the WCMA would effectively reduce the overall route density in the WCMA from 1.9 mi/mi<sup>2</sup> to 1.5 mi/mi<sup>2</sup>, resulting in 21 percent decrease from current levels and meeting the route density objective established for the management areas. This would be expected to reduce/decrease direct and indirect impacts associated with roads and vehicle travel. Closed areas (lands with wilderness characteristics) in the CBMA would not be expected to provide a measureable benefit to ferrets or prairie dogs as there would not be a reduction in route densities from current levels.

## **Alternative C – Direct and Indirect Effects**

### ***Closed Areas***

Under Alternative C, no portion of either ferret management area would be closed to motorized vehicle travel on a year-round basis. However, the Elk Springs seasonal area closure established for greater sage-grouse would encompass 7,213 acres (16 percent) of the WCMA. The proposed closure period of March 1 – July 15 would coincide with the entire prairie dog/ferret reproductive period, essentially functioning as an effective closure to eliminate road-related influences for these species. This closure area involves habitat that has recently supported some of the highest density prairie dog colonies. Additionally, nearly every black-footed ferret found/relocated in the management area has been in this area.

Motorized vehicle travel would be limited to primitive routes in the 20,589 acres of lands with wilderness characteristics that overlap with the management areas. Under this management strategy approximately 9,495 acres of prairie dog colonies in the WCMA would be exposed to

road-related influences, a seven percent decrease from current conditions (see Alternative A). Motorized vehicle travel across the remainder of the management area would be limited to designated routes. It is unlikely there would be any discernible difference between direct and indirect impacts to prairie dogs/ferrets based on road type (primitive vs. designated). There may be a greater likelihood of additional habitat degradation associated with primitive routes as these routes are generally not maintained through mechanical means but rather through public use. Should a section of route become impassable, it could lead to more widespread resource damage in an effort to avoid the damaged portion. Impacts in the CBMA would be similar to those discussed under Alternative A.

Direct and indirect impacts for lynx would be identical to those discussed under Alternative B.

### ***Over the Snow Travel***

Over the snow travel would be limited to primitive routes on the 20,589 acres of lands with wilderness characteristics units located within the management areas and limited to designated routes on the 22,284 acres of PHMA in the WCMA. There would be no areas closed to over the snow travel under this alternative. Limiting snowmobile use to designated or primitive routes in the WCMA (~95 percent of the management area) would be expected to reduce the potential to encounter/harass above ground ferrets or prairie dogs. Although impacts would still be expected, they would be far more localized and less intensive than those associated with unregulated snowmobile travel. Impacts in the CBMA would be the same as those discussed under Alternatives A and B.

Direct and indirect impacts for lynx would be identical to those discussed under Alternative B.

### ***Route Density***

Alternative C proposes to manage the ferret management areas with a route density of 1.5 mi/mi<sup>2</sup>. However, management of sage-grouse habitat within the WCMA (i.e., areas within 2 miles of a lek and the seasonal area closures) provides an additional benefit to ferrets and prairie dogs within the WCMA. Considering application of the more restrictive lek route densities within the WCMA, the overall route density for the WCMA as whole could be as low as 1.3 mi/mi<sup>2</sup> – a 32 percent decrease from current levels. The sage-grouse seasonal closure adds an additional dimension that would sharply reduce road-related influences on ferrets/prairie dogs during the entire reproductive period (involving 16 percent of the WCMA). Considered collectively, these travel management measures (i.e., the seasonal closure and the lek-specific route density management) would reduce effective road-related influences on ferret/prairie dog habitats to levels effectively equivalent to route densities as low as 1.1 mi/mi<sup>2</sup>. This would represent an effective reduction in route density of up to 42 percent from current levels (1.9 mi/mi<sup>2</sup>).

Route density prescriptions of 1.5 mi/mi<sup>2</sup> would be applied across all of the CBMA as it does not overlap with any areas requiring more restrictive management strategies. Reducing road densities to 1.5 mi/mi<sup>2</sup> could result in up to a 44 percent decrease in route density from current levels (2.7 mi/mi<sup>2</sup> (Table F6). Reductions in road densities would be expected to reduce direct and indirect vehicle and road-related impacts and increase the amount of habitat that is unaffected by vehicle use.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Under this alternative 3,552 acres (eight percent) of the WCMA associated with lands with wilderness characteristics would be closed to year-round motorized vehicle travel. Motorized vehicle travel would be limited to designated or primitive routes in the 17,037 acres of lands with wilderness characteristics units that overlap with the management areas. Motorized vehicle travel across the remainder of the management area would be limited to designated routes. Under this management strategy approximately 9,290 acres of prairie dog colonies in the WCMA would be exposed to road-related influences, a nine percent decrease from current conditions. Impacts in the CBMA would be similar to those discussed under Alternative A.

Direct and indirect impacts for lynx would be identical to those discussed under Alternative B.

### ***Over the Snow Travel***

Over the snow travel would be closed on 3,552 acres in the WCMA and limited to primitive or designated routes on the 17,037 acres of lands with wilderness characteristics units located within the ferret management areas. The remainder of the management areas would be open or limited to over the snow travel as discussed in Table 1, Record 10. Although impacts would still be expected, they would be far more localized and less intensive than those associated with unregulated snowmobile travel across the entire management areas. Impacts in the CBMA would be the same as those discussed under Alternatives A and B.

Direct and indirect impacts for lynx would be identical to those discussed under Alternative B.

### ***Route Density***

Route density prescriptions and impacts associated with route reductions would be identical to those discussed under Alternative A, if Alternative A is implemented.

## **Cumulative Effects**

Past and present management actions that have the potential to influence local prairie dog populations or contribute to habitat modification or degradation include oil and gas development, livestock grazing, recreational use, wildland fires, and rights-of-way authorizations. There has been very limited oil and gas development within or around either ferret management area in recent decades, with no reason to believe that this would change drastically in the coming years. There is little indication that current grazing strategies within the management areas are negatively influencing prairie dogs and associated species. Large transmission line which are scheduled to be constructed in the foreseeable future can serve as perches for raptors and would be expected to negatively influence prairie dogs and associates.

## 5.3. Soil Resources and Water Quality

### 5.3.1. *How would motorized and mechanized travel affect erosion of soils?*

#### **Affected Environment**

The US Department of Agriculture (USDA) has generated soil maps suitable for comparing land use compatibility in large areas of the Planning Area and general information can be found in the 2015 Proposed RMPA/Final EIS for Oil and Gas Development (Section 3.2.3) and is hereby incorporated by reference. For the purpose of analysis in this section, the soil textural classes – sand, silt, and clay are of interest since these parameters are needed to estimate erosional rates from road surfaces. Within the Planning Area, there are 4,462 miles of BLM roads (Appendix F, Table F2), of which 1,267 miles are located on soil textures classified as sandy loams, 79 miles on silt loams, 813 miles on clay loams, 1,826 miles on loams for a total of 3,985 miles, and the remainder (447 miles) are located on bedrock or were unclassified and not included in the following analysis.

#### **Impacts Common to All Alternatives**

##### ***Calculation of a Background Erosion or Soil Loss Rate***

With a decrease in vehicle compaction, soil bulk density decreases (weight per unit of volume) and soil permeability (the rate at which water or air infiltrate soil) increases. As soil bulk density decreases, vegetative cover increases, litter cover increases, soil organic matter increases, infiltration rates increase resulting in decreased runoff and surface erosion. The opposite is also true in that increases in vehicle compaction affect soil bulk density and permeability resulting in increased runoff and erosion.

An erosion model was used to better understand how management under each alternative would impact erosion rates in the Planning Area due to annual road surface erosion. Specifically, the WEPP (Water Erosion Prediction Project) model: Road Ver.9.2009 (Flanagan and Livingston, 1995) was used to calculate road surface erosion rates for the Planning Area, with the key inputs being soil texture, road width, road slope, and annual precipitation. The WEPP model predicts soil erosion and sediment delivery by water using stochastic weather generation, infiltration theory, hydrology, soil physics, and erosion mechanics. Within the Planning Area, annual precipitation, based on a 30 year average for Rio Blanco County, is 15.5 inches (2016 Prism data). Lacking availability of average BLM road gradient data, a baseline estimate was developed by considering a broad range of road gradients (0 to 10 percent) for both outsloped/rutted routes and insloped/bare routes and then using the average of those simulations. The WEPP model is limited to analyzing a 1,000ft of road surface per iteration based on the defined parameters so overall results were estimated by extrapolating from the 1,000ft road segment results.

The analysis focused on the 3,985 miles of routes for which soil textures were known (about 89 percent of the inventoried BLM routes in the Planning Area). The estimated baseline sediment production if all BLM routes were open to motorized travel (using a “low use” model assumption) is approximately 15,250 tons annually (or enough sediment to fill approximately 1,027 dump trucks). In comparison, if all of the inventoried BLM routes were closed but not reclaimed (using a “no use” model assumption), the average sediment production would be 9,959 tons annually or 671 dump trucks (35 percent reduction). For routes with active rilling that are

closed, accelerated erosion beyond the modeled results could be expected. As such, a concerted effort to implement erosion control features should be pursued during implementation of travel management plans.

### ***Erosion Hazards***

Water erosion hazard ratings are established for various soil types and are described as "slight," "moderate," or "severe." A rating of "slight" indicates that little or no erosion is likely. A "moderate" rating indicates that some erosion is likely, that the roads or trails may require occasional maintenance, and that simple erosion-control measures are needed. A "severe" rating indicates that substantial erosion is expected, that the roads or trails require frequent maintenance, and erosion-control features are required. While the scope of the impact varies by alternative, across all alternatives the trend remains the same with the majority of soils associated with the existing BLM route network (over 70 percent) having a severe erosion rating.

### ***Sensitive Soils (Fragile, Landslide, and Saline)***

During the construction, usage, and/or maintenance of a road surface, natural subsurface pipping such as animal burrows or decayed roots (macropores) and surface water flow paths (rills and/or gullies) may be interrupted. When interrupted, water collects upslope of the road surface leading to water ponding on road surface, accelerated erosion, and hillslope slumping and/or failure. Once exposed, the unprotected soils would be rapidly eroded by wind and water.

Given the limited incorporation of erosion control features on BLM roads, accelerated soil loss would be expected from road surfaces as water velocities and erosional forces increase rapidly downslope during intense rain events typical in late-summer. Landslide soils are considered unstable and subject to slumping and the importance of implementing and maintaining erosion control features on road surfaces located on fragile soils with slopes greater than 35 percent cannot be overemphasized.

Soils containing soluble salts in amounts capable of impairing plant growth (>16 mmhos) are classified as saline. The primary concern for saline soils is mechanical disturbances breaking down the physical structure of the soil profile. With exposed saline soils, increased dissolution and transport of salts and other contaminants would be expected during storm and/or wind events which impacts surface water quality.

### ***Fugitive Dust***

Fugitive dust may impact more total area than any other impacts from roads (Forman and others, 2003) and it can have serious effects on ecosystems. Dust is created and raised into the air as vehicles disturb physical and biologic soil crusts, abrade and pulverize soils, and generate wind currents. Once soil surfaces are disturbed, wind erosion may increase the amount of debris flow (Lovich and Bainbridge, 1999). In 1973, satellite photos detected six dust plumes in the Mojave Desert covering more than 1,700 km<sup>2</sup> (656.2 mi<sup>2</sup>); the plumes were attributed to destabilization of soil surfaces resulting from OHV activities (Nakata and others, 1976; Gill, 1996). Accumulations of dust on vegetation can disrupt photosynthetic and respiration processes, leading to reduced plant growth, reduced reproduction, and increased decadence. Air quality is also affected when vehicle traffic raises fugitive dust.

For soils with a propensity for the formation of dust, a fugitive dust rating class indicates the extent of dust. "Low resistance" indicates the soil has features that are very favorable for the formation of dust. "Moderate resistance" indicates the soil has features that are favorable for dust formation. "High resistance" indicates the soil has features that are unfavorable for dust formation. Fugitive dust can result in visibility reductions during severe windstorms, the loss of soil nutrients, and transport of potentially harmful chemicals (spilled fuels/oils) that adhere to soil particles. While the scope of the impact varies by alternative, across all alternatives the trend remains the same with the majority of soils associated with the existing BLM route network (over 90 percent) having a moderate resistance rating.

### ***Biological Soil Crust***

Biological soil crusts (BSC) are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria. Cyanobacterial and microfungal filaments weave through the top few millimeters of soil, bonding loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces (Belnap and Gardner, 1993). BSC in North America are diverse and most evident in arid and semi-arid regions. Pinnacled and rolling crust is typical for cold desert environments due to freezing temperatures. Where freezing temperatures result in frost heaving, crust are cyanobacteria dominated, and vascular plant roots limited, pinnacled crusts are prominent in cool deserts such as the Colorado Plateau. Distribution is influenced by elevation, soils and topography, disturbance, timing of precipitation, and vascular plant community structure. Depending on the site, BSC can be an important factor in stabilizing soils and reducing erosion, and they often play a decisive role in the success of vegetation and retention and/or production of soil nutrients.

The management of biological soil crust differs from other soil resources. Vehicle tires are particularly destructive to soil crusts and it may take up to 56 years for post-disturbance recovery (Kade and Warren 2002). Since BSC is very susceptible to any mechanical disturbance with natural recovery taking potentially decades, concentrated (sacrificial) impacts are considered preferable to dispersed impacts typically preferred for the management of physical soil properties. With concentrated usage, the expectation should be that the beneficial and protecting features associated with the presences of BSC would most likely be permanently lost.

The frequency and season of use also influences the extent of impacts to BSC. For high-density, high-impact uses (such as Christmas tree and firewood cutting areas), impacts can be reduced by permitting these activities for short durations during late fall and winter, preferably when soils are frozen (BLM Technical Reference 17230-2, 2001). For low-density uses (such as hiking or backpacking), impacts can be reduced by promoting use during the late fall and winter and restricting access during dry periods. Crust is brittle when dry and the connections to the soil particles fragile and easily crushed. Spatial inventories of BSC have not been performed in the Planning Area and it is not possible at this time to assess the current state of these resources.

### ***Open Areas***

Within open areas, off-route travel is permitted resulting in soil compaction, destruction of soil crusts (physical and biologic), and soil erosion in the form of water flow patterns, rilling, and gully formation. As vegetative cover, water infiltration, and soil stabilizing crusts are diminished or disrupted, precipitation runoff rates increase and soil erosion rates accelerate.



Appropriate siting of open areas can reduce impacts to soil resources. For example, erosion, sedimentation, and rill or gully formation are much more likely to occur in open areas located on hill tops or slopes compared to flat areas or depressions. In a study in California, soil erosion rates were evaluated at three State Vehicular Recreation Areas, with a particular focus on hill climbs. In this study, the key factors contributing to erosion rates were slope, length of climb, soil type, and weather. Based on monitoring and catchment basin yield, erosion in open areas dedicated to OHV use was 10 to 25 times greater than in undisturbed areas (Tuttle, M., and Griggs, G., 1985).

The open areas within the Rangely Rock Crawling Park are limited to rock slabs and are not discussed further. Soils within the North Dinosaur and North Rangely open areas are classified as “very rapid” for runoff and have severe erosion hazard ratings compared to a “medium” rating for runoff and a moderate-high erosion hazard for the LO7 Hill open area. In regards to fugitive dust resistance, LO7 Hill has a high resistance, North Rangely has a moderate resistance, and North Dinosaur is unrated.

For BSC, the primary area of concern is the proposed North Dinosaur open area designation. Based on visual observation, the area in and around this proposed open area supports a very dense and diverse BSC. As discussed above, cyanobacterial and microfungi filaments which compose BSC weave through the top few millimeters of soil, bonding loose particles together and forming a matrix that stabilizes and protects soil surfaces from erosive forces. Thus, as soils become disturbed and BSC destroyed, the most rapid runoff and severe erosion would be expected within the proposed North Dinosaur open area and to a lesser extent, the North Rangely open areas with the extent of the potential impact varying by the size of the open area in each alternative. Annual surface erosion from open areas was estimated using WEPP: Road Ver.9.2009 by assuming that 25 percent of the total open area acreage would be impacted by 72 inch OHV trails that were 6 percent grade with outsloped/rutted surface. Annual precipitation assumptions were 9 inches annually for North Rangely and 12 inches annually for North Dinosaur and LO7 Hill.

## **Alternative A (No Action Alt) – Direct and Indirect Effects**

### ***Exceptions for Off-Route Travel***

Under Alternative A, vehicles are permitted to travel up to 300ft from an existing route. Impacts to soils were estimated by using a 300ft buffer around all BLM routes in the Planning Area. For sensitive soils, off-route travel could impact 30,878 acres of fragile soils (>35 percent slope), 5,423 acres of landslide soils, and 14,227 acres of saline soils. In regards to erosion hazards, off-route travel could impact 235,775 acres of severe erosion hazard soils. For fugitive dust generation, 11,866 acres of low resistance soils could be impacted.

### ***Open Areas***

While there are no designated open areas in Alternative A, the proposed open areas in the other alternatives are at locations that are currently experiencing concentrated OHV use. Alternative B’s open area boundaries reflect the core of the existing disturbed areas and thus current impacts to these locations under Alternative A would be similar to those discussed in Alternative B.

### ***Closed Areas***

The background erosion rate is estimated at 15,250 tons of sediment annually. Under Alternative A, 146 miles of routes are currently closed to the public (or limited to administrative use only) which is assumed to result in an approximate reduction of 171 tons of sediment annually.

## **Alternative B – Direct and Indirect Effects**

### ***Exceptions for Off-Route Travel***

Under Alternative B, vehicles are permitted to travel up to a vehicle length off a travel route. Using a 15 ft buffer around all BLM routes in the Planning Area, off-route travel could impact 721 acres of fragile soils, 261 acres of landslide soils, and 832 acres of saline soils. In regards to erosion hazards, 11,810 acres of severe erosion hazard soils could be impacted. For fugitive dust, 828 acres of low resistance could be impacted. By limiting off-route travel, Alternative B could dramatically reduce potential impacts to these sensitive soils (over 90 percent reduction compared to Alternative A).

### ***Open Areas***

Alternative B proposes 66 acres as open areas at the North Rangely, North Dinosaur, and LO7 Hill Locations which could result in annual sediment from travel surface erosion of 11.1 tons, 42.8 tons, and 4.3 tons, respectively. The open area boundaries in Alternative B reflect the core areas of existing concentrated OHV use and estimates of sediment likely represent current conditions.

### ***Closed Areas***

With Alternative B, 676 miles of roads would be designated as closed resulting in an approximate reduction of 790 tons of sediment annually from baseline conditions. This equates to about 4.5 times less sediment than is estimated under current travel management designations in Alternative A.

## **Alternative C – Direct and Indirect Effects**

### ***Exceptions for Off-Route Travel***

Under Alternative C, vehicles are permitted to travel up to 100 ft from an existing route. Using a 100 ft buffer around all BLM routes in the Planning Area, off-route travel could impact 5,750 acres of fragile soils, 1,740 acres of landslide soils, and 5,323 acres of saline soils.

Approximately 78,249 acres of soils with a severe erosion hazard could be impacted as well as 5,219 acres of soils with a low resistance to fugitive dust generation.

As would be expected, limiting off-route travel to 100 ft would substantially reduce impacts compared to Alternative A (300 ft allowance) but would be more detrimental than only allowing for vehicles to pull off the route as in Alternatives B and D (15 ft assumption). Compared to Alternative A, Alternative C would cut impacts to low resistance soils by more than half and impacts to landslide, saline, and high erosion hazard soils by more than two-thirds. The largest reduction in impacts would be to fragile soils (impacts reduced by more than 80 percent). In contrast, Alternative C would increase impacts to these soils by generating more than 6 times the amount of sediment predicted under Alternatives B and D.

### ***Open Areas***

Alternative C proposes 237 acres of open areas in the North Rangely, North Dinosaur and LO7 Hill locations which would result in annual sediment from travel surface erosion of 37.2 tons, 128.5 tons, and 42.8 tons, respectively. Compared to Alternative B, Alternative C results in approximately 3 times the sediment production for North Rangely and North Dinosaur and 10 times the sediment for LO7.

### ***Closed Areas***

With Alternative C, 93 miles of roads would be designated as closed resulting in reduction of 109 tons of sediment annually from baseline conditions. Since current management in Alternative A is estimated to account for a reduction of 171 tons of sediment from baseline conditions, Alternative C would effectively result in an increase of 62 tons of sediment annually compared to current conditions.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Exceptions for Off-Route Travel***

Alternative D is very similar to Alternative B and allows vehicles to pull off routes so that other vehicles can safely pass. The same 15 ft buffer was assumed for both alternatives and thus the impacts of off-route travel are the same.

### ***Open Areas***

The size of each open area in Alternative D is more than what was proposed for Alternative A but less than that proposed in Alternative C. Alternative D proposes 117 acres as open areas in the North Rangely, North Dinosaur, and LO7 Hill locations which would result in annual sediment from travel surface erosion of 10.1 tons, 77.9 tons, and 13.7 tons, respectively. Sediment rates for North Rangely are very similar to Alternative B and as such are likely similar to current conditions associated with existing use of this site. Compared to Alternative B, Alternative D results in almost twice the sediment production for North Dinosaur and three times the sediment for LO7.

### ***Closed Areas***

With Alternative D, 191 miles of roads would be designated as closed resulting in reduction of 224 tons of sediment annually from baseline conditions. This would be an improvement (of 53 tons annually) over current conditions, since Alternative A is estimated to account for a reduction of 171 tons of sediment from baseline conditions.

## **Cumulative Effects**

For BSC, the invasion of exotic annual plants into perennial plant communities could pose a long-term threat to BSC. As invasive annuals such as cheat grass can quickly invade previously crust dominated interspaces between perennial plants, BSC may be displaced or stunted. With the encroachment of annual weeds/grasses, unnaturally frequent and large fires become more prominent further reducing the recolonization or succession of BSC. In addition to the discussed mechanical disturbance by vehicles, other forms of compression and/or removal disturbances include trampling by livestock, land-clearing activities during mining and oil/gas drilling activities, and to a lesser extent people (e.g., hiking, horseback riding) impact BSC.

The invasion of exotic annuals contribute to unnaturally frequent and large fires which have the potential to expose large swaths of soil resources to wind and water erosion prior to, during, and after post-fire reclamation activities as protective and stabilizing vegetation, litter, and organic matter are reestablished. Next to roads, the next largest soil disturbing activity is most likely livestock grazing. Typical impacts to soils include trailing which concentrates runoff, compaction which reduces infiltration and permeability, maceration which destroys soil structure exposing it to wind and water erosion, and vegetative cover, litter, and organic matter reduction which reduces nutrients and permeability.

For oil and gas development, impacts include construction of access roads, well pads, and vehicle traffic accessing the wells which contributes to total sediment loads and fugitive dust generation. Sediment control structures, typically mandated as conditions of the permit, reduce storm water discharge from well pads and to a lesser extent, roads supporting oil and gas activities.

### **5.3.2. How would soil erosion associated with motorized and mechanized travel affect water quality?**

#### **Affected Environment**

The United States Geological Survey (USGS) has determined that annually 296,000 tons of suspended sediment is contributed to the White River between the USGS station 09306224 (White River above Crooked Wash) and USGS station 09306290 (White River below Boise Creek) stream gauges (USGS WRI 92-4031, 1993) which includes a large portion of the Planning Area. Water quality classifications in the Planning Area are established by the Water Quality Control Commission (WQCC) based on current conditions and beneficial uses to maintain and improve the quality of Colorado's surface waters. Every 3 to 6 years, the WQCC typically updates the Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation (M&E) List. The last update was in 2016 (CPDHE 5CCR 1002 93 2016). There are 365 miles of perennial stream currently listed as impaired due to sediment within the Planning Area.

**Table 1. Stream Segments Sediment Impaired by Water Body ID (WBID)**

<b>WBID</b>	<b>Segment Description</b>	<b>Portion</b>
COLCWH13b	Mainstem of Yellow Creek from the source to Barcus Creek. All tributaries to Yellow Creek from the source to the White River	All
COLCWH22	Tributaries to White River, Douglas Creek to Colorado/Utah border	West Evacuation Wash, Douglas Creek
COLCWH23	Mainstem of East Douglas Creek and West Douglas Creek including all tributaries from their sources to the confluence	East Douglas Creek from the point below Tommy's Draw and a point above its confluence with Douglas Creek

For Water Body ID (WBID) - COLCWH13b, 356 miles of ephemeral and perennial stream are located in the Headwaters Duck Creek, Stake Spring Draw, Duck Creek – Yellow Creek,

Greasewood Creek – Yellow Creek, Pinto Gulch – Yellow Creek, Corral Gulch, and Barcus Creek watersheds with 156,816 acres and 302 miles of BLM travel routes.

For COLCWH22, 10 miles of perennial stream are located in the W. Evacuation Creek watershed with 10,762 acres and 9.5 miles of BLM travel routes.

For COLCWH23, 9.1 miles of perennial stream are located in the Headwaters E. Douglas, Outlet E. Douglas, and Cathedral Creek (HUC12) watersheds which encompasses 103,730 acres and 234.6 miles of BLM travel routes.

## **Impacts Common to All Alternatives**

### ***Introducing Sediment into Streams***

For surface water quality, roads connected hydrologically to a stream channel by a stream crossing, drainage ditch, or overland flow present two concerns:

1. Road derived sediments and contaminants transported to streams; and
2. Surface and subsurface water flow alteration (interception – ponding and/or redirection).

Road derived sediments impact water quality by depositing solids, changing water turbidity, and contributing pollutants (dissolved and total solids) to stream channels. It is unrealistic to drive a vehicle off a designated travel surface without causing some extent of soil damage. With surface water quality, the key concern is the transport of sediment to streams. As such, a seemingly innocuous indentation created by vehicle tires could potentially trigger the sequential erosional processes of water flow patterns leading to rills which, given adequate slope, results in deeper rills or a gully which, transports sediment to a road that functions as a collector for these innocuous impacts. As material is eroded from road surfaces, the formation of water flow patterns, rills, and gullies would be expected during storm events. As roads become incised, due to erosion and/or maintenance (grading), a stepped shoulder forms on both sides of the road.

In-terms of erosion, this stepped shoulder would be analogous to an exposed streambank eroding and contributing to the total sediment loads during storm events. This network of incised roads become a conduit, mimicking an ephemeral stream channel, collecting and transporting storm water runoff and suspended sediment long distances. If hydrologically connected to an ephemeral or perennial stream, this network can directly deposit eroded travel surface sediment directly into the stream channel since no buffer exists to allow deposition of suspended sediment.

It is estimated that BLM routes within the Planning Area produce approximately 15,250 tons of sediment annually (Section 5.3.1). While only 5 percent of the total White River sediment load of 296,000 tons reported by the USGS is potentially attributed to travel route surfaces by the WEPP analysis, due to limitations of the model, contributions from the stepped road shoulders, roadside disturbances, and road cuts are not included in the analysis. As such, actual contributions from BLM roads to streams is most likely greater than the 5 percent. To consider potential impacts from off-route travel, the WEPP program was used to model an outsloped/rutted road located in Maybell, Colorado based on 15ft, 100ft, and 300ft perennial stream buffers which estimated roughly 1.1 tons/mi/yr, 0.4 tons/mi/yr, and 0.2 tons/mi/yr, respectfully, could reach the stream.

### ***Open Areas***

As summarized in Section 5.3.2, considerable sediment is expected to be generated from the proposed open areas. Some of this sediment would be deposited on surfaces within the open area, some would be transported and deposited within drainage features (rills, gullies, and/or ephemeral drainages) within the open area, and some would be transported to perennial streams.

The proposed North Rangely open area is an area that has been currently used as an unauthorized hill-climb and OHV play area. Due to its proximity to the White River, the majority of sediment suspended during intense rain events (typical in late-summer) would be rapidly transported to the White River. Potentially, management actions such as sediment retention ponds could be installed to capture some of the suspended sediment. Unfortunately, the construction and maintenance of sediment pond basins adequate to capture peak runoff sediment isn't a practical solution and, if not properly maintained, can result in channel down-cutting further exacerbating the problem. Cost aside, the impacts from removing and disposing of generated sediment from these ponds would be problematic.

## **Alternative A (No Action Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Under this alternative, within the E. Douglas Creek Headwater watershed, there are 9,238 acres with 12.8 miles of roads designated as closed to motorized travel which is assumed to result in a reduction of 14.9 tons of erosion from road surfaces that could be transported to stream channels during rain events. Inadequate field data are available to evaluate the amount of sediment leaving the road surface, crossing the buffer, and potentially entering E. Douglas Creek.

### ***Exceptions for Off-Route Travel***

Alternative A would allow unrestricted travel for game retrieval (so long as no resource damage occurs) and travel off-route for up to 300ft for activities such as camping. To evaluate potential impacts to perennial streams, an analysis was conducted by applying a 300ft buffer around all perennial streams in the Planning Area. There are 116 miles of roads located within 300ft of a perennial stream which could potentially contribute 23.2 tons/yr of sediment to stream channels. Since a 300ft buffer is typically adequate to filter out sediment and/or contaminants washed off a road surface (unless the road and stream are hydrologically connected by a stream crossing, drainage feature, or bare ground unable to inhibit surface runoff), impacts associated with off-route travel of more than 300 ft for big game retrieval were not addressed.

### ***Floodplains***

Damage to floodplains would be expected with Alternative A. For example, with camping there is a preference to camp near a flowing stream. Once established, a camping area near a stream becomes very popular with concentrated impacts to the floodplain including woody debris removal for campfires, compaction, trampling of terrestrial and riparian vegetation, and rutting/bank destabilization during wet periods. Applying the 300ft buffer to existing roads, using National Hydrography Dataset (NHD) from the U.S. Geological Survey data, off-route travel in Alternative A potentially impacts 7,152 acres of floodplains.

## **Alternative B – Direct and Indirect Effects**

### ***Closed Areas***

Under this alternative, within the W. Evacuation Creek watershed, 6,071 acres of the total 10,762 acres (56 percent) and 6.8 miles of the total 9.5 miles (72 percent) of roads are closed to motorized travel. Within the Headwaters E. Douglas, Outlet E. Douglas, and Cathedral Creek watersheds, 27,235 acres of the total 103,730 acres (26 percent) and 41.8 miles of the total 234.6 miles (18 percent) of roads are closed to motorized travel. Within the Headwaters Duck Creek, Stake Spring Draw, Duck Creek – Yellow Creek, Greasewood Creek – Yellow Creek, Pinto Gulch – Yellow Creek, Corral Gulch, and Barcus Creek watersheds, 47,308 acres of the total 156,816 acres (30 percent) and 71.8 miles of the total 302 miles (24 percent) of roads are closed to motorized travel. Closing 120.4 miles of routes could result in a reduction of 160 tons of erosion from road surfaces that could be transported to stream channels.

### ***Exceptions for Off-Route Travel***

Under Alternative B, the public would be permitted to pull one vehicle length off of a route to allow for parking. To evaluate potential impacts to perennial streams, an analysis was conducted by applying a 15ft buffer around all perennial streams in the Planning Area. There are 3 miles of roads within this buffer which potentially contribute 3.3 tons/yr of sediment to the stream channel.

### ***Floodplains***

With the restriction on off-route travel of one vehicle length, very limited damage to floodplains would be expected with Alternative B. Based on the National Hydrography Dataset, off-route travel could potentially impact 370 acres of floodplains. An additional 205 acres of floodplain along the White River would be closed to motorized travel including Beefsteak (38 acres) which is located above Kenney Reservoir, and the Olive Garden (50 acres) and Hardaway (117 acres) parcels which are located below Kenney Reservoir.

The distinction for above or below Kenney reservoir is made since Kenney Reservoir retains 91 to 98 percent of the sediment transported by the White River from above the reservoir (USGS 90-4071, Tobin, R.L., and Hollowed, C.P., 1990). As such, the Olive Garden and Hardaway floodplains are located within a relatively clean water segment of the White River. With only 2 to 9 percent of historic sediment available, this reach of the White River doesn't have the sediment available to maintain the historic river geomorphology or floodplains. As such, any acceleration by mechanical disturbance would hasten the degradation of these critical floodplains potentially accelerating the encroachment of the river on roads/structures within the river corridor and impacting river geomorphology.

## **Alternative C – Direct and Indirect Effects**

### ***Closed Areas***

Under this alternative, none of the impaired watersheds are in located in closed areas. Compared to current conditions (Alternative A), within the E. Douglas Creek Headwater watershed, there are 9,238 acres with 12.8 miles of roads that would no longer be part of a closed area and may result in an additional 14.9 tons of erosion from road surfaces that could be transported to stream channels during rain events.

### ***Seasonal Closures***

With regards to water quality, any restrictions limiting or preventing travel on wet and muddy roads and/or from roads with active snowmelt or rain runoff would be beneficial since severe rutting by vehicle tires promotes sediment-laden runoff. Depending on the winter, road conditions could vary from snow covered and frozen, to wet/muddy, to dry/dusty during these seasonal limitations. Typically, it would be expected to have snow covered roads during January and February, wet/muddy transition during March through May, and dry/dusty during June and July. As such, a benefit to water quality would be expected from the big game seasonal limitation but less so for the sage-grouse nesting limitation.

### ***Exceptions for Off-Route Travel***

Alternative C proposes a 100ft allowance for off-route travel. To evaluate potential impacts to perennial streams, an analysis was conducted by applying a 100ft buffer around all perennial streams in the Planning Area. There are 37.5 miles of roads within this buffer which could contribute 15.4 tons/yr of sediment to streams.

### ***Floodplains***

Based on the National Hydrography Dataset, off-route travel allowances could potentially impact 2,768 acres of floodplains.

## **Alternative D (Preferred Alt) – Direct and Indirect Effects**

### ***Closed Areas***

Under this alternative, within the W. Evacuation Creek watershed, 3,628 acres of the total 10,762 acres (33 percent) and 1.7 miles of the total 9.5 miles (18 percent) of roads are closed to motorized travel. Within the Headwaters E. Douglas, Outlet E. Douglas, and Cathedral Creek watersheds, 7,392 acres of the total 103,730 acres (7 percent) and 3.8 miles of the total 234.6 miles (1.6 percent) of roads are closed to motorized travel. Within the Headwaters Duck Creek, Stake Spring Draw, Duck Creek – Yellow Creek, Greasewood Creek – Yellow Creek, Pinto Gulch – Yellow Creek, Corral Gulch, and Barcus Creek watersheds, 0 acres of the total 156,816 acres are closed to motorized travel.

In-terms of annual sediment reductions based on miles of closed roads, W. Evacuation Creek is 2 tons and the Headwaters E. Douglas, Outlet E. Douglas, and Cathedral Creek is 4.4 tons. Within W. Evacuation Creek, the stream is located within private land and minimally influenced by erosion impacts from BLM roads.

### ***Exceptions for Off-Route Travel***

Impacts would be the same as Alternative B.

### ***Floodplains***

Impacts would be the same as Alternative B.

## **Cumulative Effects**

In addition to the 4,462 miles of BLM roads there are also 492 miles of county roads in the Planning Area (Appendix F, Table F4). Based on an average used for BLM routes (see Section 5.3.1), an additional 1,882 tons annually could be eroded from county roads within the Planning Area. Within the Planning Area, 1,481 miles of streams are listed on the 303(d) impaired list for aquatic insects, temperature, and sediment. Stream channel incision, streambank instability, and



roads are the primary sources for sediment impacting water quality. The primary causal factors are past and current grazing, inadequate BLM road design, and travel during wet/muddy conditions.

## **5.4. Cultural and Paleontological Resources**

### ***5.4.1. How would proximity of routes to sites contribute to the physical damage or potential looting of cultural sites and scientifically important paleontological resources?***

#### **Affected Environment**

As of March 2018, 9,231 documented cultural and paleontological resources lie within the Planning Area. Of those resources, 8,648 are cultural resources, 591 are paleontological resources, and eight are both. Sections 3.6.1 and 3.6.2 of the 2015 Proposed RMPA/Final EIS for Oil and Gas Development discuss the types of cultural and paleontological resources found within the Planning Area, as well as the regulations and policies of cultural and paleontological resource management and is hereby incorporated by reference.

Approximately 125,751 acres (8 percent) of the Planning Area has been adequately surveyed for cultural resources and 171,343 acres (11 percent) have been surveyed for paleontological localities. However, 100 percent of the proposed open areas have been surveyed for cultural resources.

#### **Impacts Common to All Alternatives**

The types of direct and indirect impacts to cultural and paleontological resources remain the same for all alternatives. Routes impact cultural and paleontological resources through physical damage such as crushing, erosion, fugitive dust, construction and maintenance activities, and route closures. In addition, research indicates that the proximity of a cultural site to a route affects the likelihood of looting and vandalism.

#### ***Physical Damage***

Assessment of physical damage to sites focuses almost entirely on motorized travel. Motorized impacts to cultural and paleontological resources that lie on the surface are commonsensical: driving over archaeological and paleontological sites can damage or destroy artifacts, features, and fossils. This impact mostly applies to resources that do not have large features that would impede motorized travel, such as a barn, a masonry structure, a rock shelter, or cliff face (Sullivan 2015).

Construction and maintenance activities can impact sites that are bisected by or near a road. These activities obliterate surface and subsurface features, artifacts, and fossils. Route closures can also prove destructive to sites depending on the amount of surface disturbance required (ripping and seeding vs. erecting a barrier).

Travel routes that cross through a site and off-road travel contribute to erosion as described in the Soil Resources section of this analysis (Section 5.3.1.). Erosion can reveal, displace, and destroy artifacts and features previously protected under the surface. Driving off-route can prove

particularly damaging to cultural sites, as driving over sensitive soils can accelerate erosion. Driving vehicles off-route often results in the creation of user trails, which can facilitate vandalism and looting at cultural and paleontological sites (Sullivan 2015).

Lastly, fugitive dust from travel on unpaved roads can obscure or potentially damage nearby rock art panels at archaeological sites, though to what extent these effects occur remains inconclusive (Silver 2008). Silver (2008) and Spangler (2008) contend that the increased vehicle traffic on dirt roads in Nine Mile Canyon increased dust deposition and damage to nearby rock art. However, in a 2011 study Itasca Denver sampled sediment from roads, rock art panels, and overlying geologic strata in the canyon in a robust geochemical analysis. The salts and sediments present on the panels supported a naturally-deposited origin rather than being deposited from a road (Itasca Denver 2011).

### ***Looting and Vandalism***

Several studies suggest a relationship between the proximity of a cultural site to a road and the likelihood of vandalism or looting (Francis 1978; Hedquist and Ellison 2010; Hedquist et al. 2014; Lightfoot 1978; Nickens et al. 1981; Schroeder 2010; Spangler 2008; Spangler et al. 2006; Sullivan 2015). These studies indicate that cultural sites within 200 meters of a road are at higher risk of looting episodes than cultural sites further away. However, certain site types prove exempt from this rule. Lightfoot (1978), Nickens et al. (1981), Spangler (2008), and Sullivan (2015) note that sites with visible architectural features or sites located on prominent landforms (rock shelters, overlooks, etc.) tend to be targeted based on visibility from the road rather than distance. Spangler's (2008) study notes that rock art panels within 70 meters of a road feature were in worse condition and displayed more graffiti than panels over 100 meters from a road.

Little research has been conducted between the relationship between access and poaching of paleontological resources. Therefore, paleontological resources would be included in the same analysis for indirect effects as cultural resources.

### ***Open Areas***

Alternatives B, C, and D propose four open areas of varying sizes at locations within the Planning Area that are currently being used by the public as areas of concentrated OHV recreation. Cultural and paleontological resources within open areas would be the most susceptible to the physical damage described above. Accelerated erosion from concentrated use could expose and damage subsurface cultural materials. Of the four proposed open areas, North Dinosaur would be most affected by erosion (see Section 5.3.1). North Dinosaur also features the highest density of cultural resources and accelerated erosion would likely result in exposed cultural isolates revealing larger archaeological sites.

Both the Rangely Rock Crawling Park and North Dinosaur feature bedrock and driving over geologic formations with paleontological resources could damage fossils. However, no scientifically important localities have been identified within the open area boundaries.

### ***Closed Areas***

Cultural resources within closed areas would be the least affected of the different use areas. While cultural and paleontological sites near a motorized access point outside the boundary of a closed area could still be susceptible to looting, the sites and localities would be largely protected

from the direct and indirect impacts of travel. The exception would be if closing existing roads requires ground disturbance.

### ***Programmatic Agreement***

All alternatives have the potential to impact cultural resources. The BLM is currently developing a Programmatic Agreement with the Advisory Council on Historic Preservation, the State Historic Preservation Officer, Tribes, and other Consulting Parties to meet its obligations under Section 106 of the National Historic Preservation Act. The Programmatic Agreement would provide guidance on how to identify, evaluate, and resolve adverse effects to cultural resources as a result not only of any area designations made in this planning effort but also in subsequent travel management plans (e.g., route designations and route maintenance).

## **Alternative A (No Action Alt) – Direct and Indirect Effects**

Table 2 lists the number of known cultural and paleontological resources that may be affected by current management in Alternative A. While Alternative A does not authorize open areas, the impacts from the existing areas of concentrated OHV use would likely continue to impact cultural resources. Alternative A allows for vehicles to travel 300 feet off of an existing route, the largest corridor of the alternatives. Therefore, this 600 foot corridor could potentially affect the greatest number of cultural and paleontological resources (up to 12 percent of all known sites eligible or potentially eligible for listing on the National Register of Historic Places and up to 47 percent of all known paleontological localities.)

**Table 2. Alt A – Summary of Known Cultural and Paleo Resources in the Planning Area**

Management	Cultural Resources		Listed, Eligible, Supporting, and Needs Data Sites <sup>2</sup>		Architectural, Sheltered, and Rock Art Sites <sup>3</sup>		Paleontological Resources	
	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Localities	% of Known Localities <sup>4</sup>
Allowances for travel up to 300 ft off-route	3,623	42%	996	12%	322	4%	282	47%
Limited to designated routes <sup>1</sup>	5,081	59%	1,223	14%	475	5%	368	61%
Closed Areas	191	2%	59	>1%	35	>1%	0	0%

<sup>1</sup>Areas within 200 meters (656 ft) of designated routes may have increased risk for potential looting. This buffer overlaps with the allowances for off-route travel.

<sup>2</sup>These sites may be either listed or eligible for listing on the National Register of Historic Places and are a subset of all cultural resources.

<sup>3</sup>Architectural and rock art sites are a subset of all listed and eligible sites.

<sup>4</sup>Percentage of known sites or localities within the Planning Area.

## **Alternative B – Direct and Indirect Effects**

Table 3 lists the number of known cultural and paleontological resources that would be affected by Alternative B. Alternative B features the smallest area for the proposed North Dinosaur open

area, and thus impacts from erosion would be less than Alternatives C and D. Alternative B increases the number of acres closed to motorized travel which would provide additional protection to resources within these areas (an additional 124 listed or eligible cultural sites or 25 paleontological localities compared to Alternative A). However, road closure methods that require ground disturbance would have the potential to physically impact sites if they lie within the road. Alternative B allows for vehicles to pull off one vehicle length from the road for safety. For the purpose of analysis one vehicle length is assumed to be 15 feet. Alternatives B and D feature the lowest number of cultural and paleontological resources that could be physically impacted by the driving corridor (up to 5 percent of all known sites eligible or potentially eligible for listing on the National Register of Historic Places and up to 16 percent of all known paleontological localities).

**Table 3. Alt B – Summary of Known Cultural and Paleo Resources in the Planning Area**

Management	Cultural Resources		Listed, Eligible, Supporting, and Needs Data Sites <sup>2</sup>		Architectural, Sheltered, and Rock Art Sites <sup>3</sup>		Paleontological Resources	
	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Localities	% of Known Localities <sup>4</sup>
Open Areas	30	>1%	12	>1%	1	>1%	3	<1%
Allowances for travel up to 15 ft off-route	1,164	13%	462	5%	80	>1%	93	16%
Limited to designated routes <sup>1</sup>	4,919	57%	1,218	14%	456	5%	362	60%
Closed Areas	927	11%	183	2%	148	2%	25	4%

<sup>1</sup>Areas within 200 meters (656 ft) of designated routes may have increased risk for potential looting. This buffer overlaps with the allowances for off-route travel.

<sup>2</sup>These sites may be either listed or eligible for listing on the National Register of Historic Places and are a subset of all cultural resources.

<sup>3</sup>Architectural and rock art sites are a subset of all listed and eligible sites.

<sup>4</sup>Percentage of known sites or localities within the Planning Area.

## Alternative C – Direct and Indirect Effects

Table 4 lists the number of known cultural and paleontological resources that would be affected by Alternative C. Alternative C features the largest area for the proposed North Dinosaur open area and thus impacts from erosion would be greater than any other alternative. Alternative C has the fewest number of closed areas and there would be two known listed or eligible for listing sites that would lose protection compared to current conditions in Alternative A. Alternative C would allow for travel up to 100 ft off-route which could impact up to seven percent of listed or eligible sites and 27 percent of known paleontological localities.

**Table 4. Alt C – Summary of Known Cultural and Paleo Resources in the Planning Area**

Management	Cultural Resources		Listed, Eligible, Supporting, and Needs Data Sites <sup>2</sup>		Architectural, Sheltered, and Rock Art Sites <sup>3</sup>		Paleontological Resources	
	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Localities	% of Known Localities <sup>4</sup>
Open Areas	30	>1%	10	>1%	1	>1%	0	0%
Allowances for travel up to 100 ft off-route	2,257	26%	686	7%	179	2%	162	27%
Limited to designated routes <sup>1</sup>	5,099	59%	1,244	14%	478	6%	368	61%
Closed Areas	180	2%	57	1%	35	>1%	0	0%

<sup>1</sup>Areas within 200 meters (656 ft) of designated routes may have increased risk for potential looting. This buffer overlaps with the allowances for off-route travel.

<sup>2</sup>These sites may be either listed or eligible for listing on the National Register of Historic Places and are a subset of all cultural resources.

<sup>3</sup>Architectural and rock art sites are a subset of all listed and eligible sites.

<sup>4</sup>Percentage of known sites or localities within the Planning Area.

### Alternative D (Preferred Alt) – Direct and Indirect Effects

Table 5 lists the number of known cultural and paleontological resources that would be affected by Alternative D. Alternative D proposes for the North Dinosaur open area to be in between Alternatives B and C in terms of size and avoids some of the more sensitive resources. Like Alternative B (though to a lesser extent), Alternative D would increase the acres of closed areas compared to Alternative A. Road closure methods that require ground disturbance would have the potential to physically impact sites if they lie within the road. Alternative D allows for vehicles to pull off one vehicle length (assumed to be 15 feet) from the road for safety. Therefore, fewer cultural and paleontological resources are likely to be physically impacted by the driving corridor than in Alternatives A and C.

**Table 5. Alt D – Summary of Known Cultural and Paleo Resources in the Planning Area**

Management	Cultural Resources		Listed, Eligible, Supporting, and Needs Data Sites <sup>2</sup>		Architectural, Sheltered, and Rock Art Sites <sup>3</sup>		Paleontological Resources	
	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Sites	% of Known Sites <sup>4</sup>	Number of Localities	% of Known Localities <sup>4</sup>
Open Areas	31	>1%	10	>1%	1	>1%	3	<1%
Allowances for travel up to 15 ft off-route	1,201	14%	473	5%	89	1%	93	16%
Limited to designated routes <sup>1</sup>	5,066	59%	1,240	14%	475	5%	365	61%
Closed Areas	306	4%	77	>1%	64	>1%	7	1%

<sup>1</sup>Areas within 200 meters (656 ft) of designated routes may have increased risk for potential looting. This buffer overlaps with the allowances for off-route travel.

<sup>2</sup>These sites may be either listed or eligible for listing on the National Register of Historic Places and are a subset of all cultural resources.

<sup>3</sup>Architectural and rock art sites are a subset of all listed and eligible sites.

<sup>4</sup>Percentage of known sites or localities within the Planning Area.

## Cumulative Effects

Past and present impacts to cultural resources include oil and gas development, livestock grazing, and recreation. Impacts from these activities varies, but all would continue into the future. Of the listed activities, the construction of roads for oil and gas development would likely cause the most direct and indirect impacts described to nearby sites. Increased recreation on designated routes and open areas could also increase the need for maintenance activities and accelerate erosion.

## 5.5. Visual Resources

### ***5.5.1. How would the proposed LO7 Hill and North Dinosaur open areas impact the scenic quality in those areas with VRM Class II objectives?***

#### **Affected Environment**

The purpose of visual resource management is to manage the scenic quality of the visual environment and reduce the visual impact of development activities while maintaining the viability of all resource programs. The objective of VRM Class II areas is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Detailed information about the Visual Resource Inventory (VRI) class ratings and Visual Resource Management (VRM) class objectives for the WRFO can be found in the 2015

Proposed RMPA/Final EIS for Oil and Gas Development in Section 3.6.3 and is hereby incorporated by reference.

The LO7 Hill proposed open area is located approximately 4.5 miles south of the Town of Meeker along RBC Rd 13 in the Flag Creek drainage. This parcel is the only accessible public land in this drainage and is characterized as a rural, agricultural landscape with scattered residential areas and a golf course seen along RBC Rd 13 from Meeker to the proposed open area. RBC Rd 13 would be where the majority of casual observers would view the proposed open area from. This area has open rolling terrain is predominantly covered in sagebrush and grasses (Figure 7). Local community members have largely accepted OHV riding as an appropriate use of this area over the years and are supportive of managing this use in this area.

The North Dinosaur proposed open area is located approximately 0.5 miles north of the Town of Dinosaur along MC Rd 161, which is where the majority of casual observers would view the proposed open area from. This area is characterized by fence lines, power lines, water tanks, and omnipresent off-route OHV tires tracks. It is undulating terrain with bedrock outcroppings covered with pinyon-juniper trees with sparse ground cover and vegetation (Figure 10). Local community members have largely accepted OHV riding as an appropriate use of this area over the years and are supportive of managing this use in this area.

#### **Alternative A (No Action Alt) – Direct and Indirect Effects**

Neither one of these open areas would be authorized under this alternative. It is expected that the existing OHV riding that has occurred in these areas over the past several decades would continue. There is a possibility as OHV technology improves and OHV riding popularity increases that off-route OHV riding could spread into areas that have not had this activity occur resulting in new disturbance. By managing this use with signage, boundary delineation, and parking areas as proposed under the other alternatives, it is less likely for this use to spread into new undisturbed areas. Overall, it is not likely that this alternative would improve the scenic values found in these areas.

#### **Alternative B – Direct and Indirect Effects**

This alternative proposes to manage off-route OHV riding in these areas by defining boundaries for use with signage and fencing, installing wayfinding signage and kiosks, and establishing parking areas. This should serve to contain long-term visual impacts such as tires tracks and other ground disturbances.

The LO7 Hill open area under this alternative (5 acres) would not be able to be seen from RBC Rd 13, the key observation point for this area. There would be at least a 150 foot buffer of BLM lands that rises approximately 50 feet in elevation from RBC Rd 13 to the proposed open area. This alternative would be the least noticeable by casual observers on RBC Rd 13 of the alternatives, would likely not result in any substantial changes to the VRI, and would meet the VRM Class II objectives.

The North Dinosaur open area under this alternative (50 acres) would be located on the west side of MC Rd 161 and would be seen from this key observation point. Due to the pinyon-juniper vegetation in this area, observers would not be able to see extensively across this open area without actually traveling through the area. This alternative would be the least noticeable by



casual observers on MC Rd 161 of the alternatives, would likely not result in any substantial changes to the VRI, and would meet the VRM Class II objectives.

### **Alternative C – Direct and Indirect Effects**

The LO7 Hill open area under this alternative (50 acres) would be able to be seen from RBC Rd 13, the key observation point for this area, because of area that extends into a drainage along the southwest boundary and is located along approximately 460 feet of RBC Rd 13. This may attract the attention of observers along this portion of the road and would be the most noticeable by casual observers on RBC Rd 13 of the alternatives.

The North Dinosaur open area under this alternative (150 acres) would be located along both sides of MC Rd 161 for approximately 0.6 miles and would be more likely to be seen and noticed from this key observation point than the other alternatives.

### **Alternative D (Preferred Alt) – Direct and Indirect Effects**

The LO7 Hill open area under this alternative (16 acres) would have similar effects as described under Alternative B, except the area would be larger. The area would not be noticeable from RBC Rd 13 because it would have the same western boundary with a 150 buffer off RBC Rd with 150 foot elevation gain. This open area would likely not result in any substantial changes to the VRI, and would meet the VRM Class II objectives.

The North Dinosaur open area under this alternative (91 acres) would be located along approximately 0.5 mile of MC Road 161. This area would be more noticeable than Alternative B, but less noticeable than the effects under Alternatives A and C. The pinyon-juniper vegetation would likely screen the view across this area that currently has omnipresent off-route OHV tire tracks. Because of these factors this open area would likely not result in any substantial changes to the VRI, and would meet the VRM Class II objectives.

### **Cumulative Effects**

Assuming that OHV technology would continue to evolve and improve, and OHV riding on public lands would continue to increase in popularity, these areas that have received off-route OHV riding over the past several decades would likely receive more use and use would potentially spread into new areas. Managing this use with defined boundaries, established parking areas, and signage would likely result in less impacts to scenic quality across the landscape.

The LO7 Hill parcel has a No Surface Use stipulation for oil and gas development (WR-NSO-32) to maintain and/or enhance targeted recreational opportunities, experiences, and benefits with a primary market-based strategy being “Community” for a market base of Meeker and the upper White River Valley of Northwestern Colorado. Alternative D was designed with input from the local BLM grazing permittees to reduce impacts to livestock grazing operations on the parcel (e.g., maintaining access to water).

The North Dinosaur proposed open areas is near or contains municipal water storage tanks and wells, power lines, fences, and other tanks.

## 5.6. Vegetation

### 5.6.1. How would motorized travel impact special status plant species?

#### Affected Environment

Special status plant species are those listed (threatened or endangered) or in candidate or proposed status by the U.S. Fish and Wildlife Service (FWS) under the Endangered Species Act and those placed on the Colorado BLM State Director's Sensitive Species List. Within the Planning Area, there are a total of 4,632 acres of occupied habitat for special status plants.

The two federally threatened plant species are Dudley Bluffs bladderpod (*Physaria congesta*) and Dudley Bluffs twinpod (*Physaria obcordata*). These two wild mustards are found exclusively in the Piceance Basin of Rio Blanco County, Colorado. A third federally threatened plant species, Ute Ladies' tresses (*Spiranthes diluvialis*), is currently unknown within the WRFO. However, suitable habitat may occur in the Planning Area, especially along the White River.

The BLM also manages 13 plant species as BLM sensitive species. Management actions in suitable habitat for these species emphasize conservation to minimize the likelihood and need for listing under the ESA (i.e., maintain viable populations to prevent federal listing).

More detailed information about individual species habitat, population occurrences, monitoring, and threats can be found in the 2015 Proposed RMPA and Final EIS for Oil and Gas Development (Section 3.3.4) and is hereby incorporated by reference.

#### Impacts Common to All Alternatives

##### **Crushing and Trampling Impacts**

General impacts to special status plant species include direct mortality to plants from trampling or crushing from motorized, mechanized, equestrian, or hiking use. Fragmentation of open space by roads also can reduce available habitat, spread noxious and invasive weeds, and create barriers to dispersal of plants (Trombulak and Frissell 2000).

It is anticipated that impacts to special status plants would be minimized due to use occurring while plants are dormant in the winter, and the fact that plants would be protected by snow cover. In general if snow levels are adequate, impacts to special status plants are anticipated to be minimal; however heavy repeated use in the same area, or use when snow levels are not sufficient may result in the direct loss of plants from crushing or being ripped out of the ground by the track.

Casual use across the landscape from foot and horse travel has the potential to crush individual plants on a limited basis, but mortality to individuals is expected to be minimal. In areas of heavy foot and horseback use, trails should be placed in an area devoid of occupied plant habitat to prevent the loss of plants from repeated heavy use by hikers and horseback riders.

##### **Fugitive Dust**

Fugitive dust production as a result of motorized and mechanized use on unpaved roads is expected to impact special status plants as dust collects on the leaves. The specific amount of

dust coming off the road surface is linearly dependent on vehicle weight and travel speed (Gillies et al. 2005) as well as wind speeds and topography. Dust accumulation on leaves of plants has been shown to lower stomatal conductance, increase leaf temperature, increase moisture loss, and reduce photosynthetically active radiation, all by shading the leaf surface (Sharifi et al. 1997, Grantz et al. 2003). These impacts would be most evident during times of the year when there are longer periods between precipitation events and dust has an increased opportunity to accumulate on plants. Since it would be infeasible for the BLM to apply dust abatement to all routes traversing habitat for special status plants, it is assumed that the best protection for plants would be to consider proximity of routes to plants during route-by-route designations during implementation planning.

### **Alternative A (No Action Alt) – Direct and Indirect Effects**

Under Alternative A, the closed areas would protect a small population (<0.1 acre) of special status plants within the Windy Gulch WSA.

In ACECs, travel is limited to designated routes which minimizes the risk of new user created routes being developed within the ACEC, and allows an opportunity for reclamation of user created routes once discovered to minimize impacts to special status plants. However, about a third of the Planning Area is currently only seasonally limited to existing routes which can lead to unauthorized route proliferation. The RMP also currently allows motorized vehicles to travel up 300 feet from an existing road to gather firewood, camp, etc. These allowances for travel off of designated routes could potentially allow damage to occur to special status plants since the general public would likely not be aware of all special status plant locations. New user-created routes have the potential to bisect populations and cause direct mortality to plants.

### **Alternative B – Direct and Indirect Effects**

Alternative B proposes to increase the acreage of closed areas which would protect 1,224 acres of occupied habitat for special status plant species from motorized use. Under Alternative B, motorized travel outside of open or closed areas would be limited to designated routes, including 3,408 acres of occupied habitat for special status plants. There are known populations of special status plants located outside of the ACECs and this would expand protection for those plants located outside of ACECs. Existing routes in the WRFO have in some cases already bisected populations of plants. During the route by route designation process there may be an opportunity to reclaim existing routes that bisect populations allowing plants to recolonize along closed roads.

Alternative B allows for vehicles to pull off of designated routes up to one vehicle length to provide for safety, but does not allow for travel off of designated routes for activities such as post-pole collection, Christmas tree collections, dispersed camping, or fire wood collection or other such activities. This alternative provides the greatest protection for plant populations adjacent to designated routes by reducing the chance of inadvertent travel across plants. However, Alternative B also includes a number of exceptions for off-route travel for administrative use. Most actions require prior written approval, and impacts from off-route travel could be mitigated at that time to prevent impacts to special status plants. There is however two exceptions that would allow off-route travel for administrative use without prior written approval. These exceptions are for trailing and gathering livestock within an allotment or to conduct animal husbandry for a sick animal. During these times, there is the potential for plants

to be crushed or ripped out of the ground by motorized vehicles or trailing livestock. To minimize these impacts, it would be important for Rangeland Management Specialist and the Authorized Officer to educate permittees on locations of special status plants and try to prevent these activities from occurring on special status plant populations to the maximum extent possible.

### **Alternative C – Direct and Indirect Effects**

Compared to Alternative A, Alternative C provides greater protection for special status plants since approximately 4,631 acres of occupied habitat for special status plants would be limited to designated routes. However, while Alternative C would expand the closed areas compared to Alternative A, the impacts to special status plants remains the same in that only one small population (<0.1 acre) of special status plants occurs within the closed areas.

Alternative C would also reduce the allowance for off-road travel to 100 ft (compared to 300 ft for Alternative A). While this would reduce the area of potential impact due to plants being unknowingly driven over/crushed by public users, there would still be the potential for impact. There are known occurrences within the WRFO where special status plants occur immediately adjacent to or within 100 feet of existing routes. Similar to Alternative B, there would be exceptions for off-route travel by administrative users.

### **Alternative D (Preferred Alt) – Direct and Indirect Effects**

Alternative D is similar to Alternatives A and C in that most of the special status plant populations occur outside of the closed areas. In Alternative D, there would be two small populations of special status plants totaling approximately 1.7 acres that occur within the closed areas and would be protected from impacts from motorized transportation. The remaining acreage that would be limited to designated routes or primitive routes contains approximately 4,630 acres of special status plants (similar to Alternative C). Alternative D is similar to Alternative B in that vehicles would only be allowed to pull off of designated routes the minimum amount necessary to let other vehicles safely pass. This would minimize the impacts to plants immediately adjacent to roads to the maximum extent possible. Similar to Alternatives B and C, there would be exceptions that allow off-route travel for administrative use.

### **Cumulative Effects**

Past and present actions that impact special status plants include industrial development (e.g., oil and gas, sodium bicarbonate, and coal), dispersed recreation, right-of way authorizations, vegetation treatments, and wildland fires.

Industrial development from construction of well pads, pipelines, and additional access routes are expected to contribute to fugitive dust production in addition to dust production from designated travel routes within WRFO. Industrial development generally avoids construction activities from occurring on occupied plant habitat through No Surface Occupancy stipulations (NSO), so it is not expected to contribute to crushing and trampling of plants.

Wildfires and fuels treatments often leave large areas devoid of vegetation for a short time-frame and can also contribute to additional fugitive dust production if these areas experience high-wind events following the treatments or fires. There is also the potential for crushing and trampling of special status plants during fire suppression activities; however resource advisors assigned to

incidents are generally working with fire fighters to minimize the impacts to plants during these events.

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***5.6.2. Would closed areas and limitations that restrict travel to designated routes impact the ability of the public to harvest woodland and timber products (e.g., firewood and Christmas trees)?***

**Affected Environment**

Pinyon/juniper woodlands cover 44 percent of the Planning Area and is mostly found between 5,200 and 8,000 feet on somewhat xeric ridgetops. The combination of ponderosa pine, lodgepole, and spruce/fir woodlands encompasses about 2 percent of the Planning Area and is scattered throughout the eastern and southern portions of the Planning Area at elevations between 6,000 and 11,000 feet (depending on species). The aspen forests encompass about 1 percent of the Planning Area and are usually found between 7,000 and 10,000 feet primarily in the southern portion of the field office and along the upper elevations of Douglas Creek and Piceance Creek.

Traditional wood products harvested in the WRFO include firewood, Christmas trees, and post and poles. The 1997 RMP currently limits the locations within the field office where the general public can harvest woodland products (RMP page 2-21). For example, firewood and Christmas tree permits would not be issued for the Blue Mountain/Moosehead and White River geographic reference areas.

**Impacts Common to Alternatives**

Based on a recent pinyon juniper survey since the 1997 White River RMP, there are 708,937 acres of pinyon-juniper woodlands available for non-commercial firewood and Christmas tree harvest in the Planning Area. This number was determined by overlaying the pinyon-juniper inventory with the geographical reference areas (GRA) that are available for non-commercial tree harvest in the Planning Area. It is assumed that the probability of a trees being harvested would decrease as you move further away from roads.

**Alternative A (No Action Alt) – Direct and Indirect Effects**

In areas available for firewood gathering, Alternative A designates 24,554 acres as closed to motorized travel (about 3 percent of available areas). In these areas collection of woodland products is not likely to occur due to the time and labor that would be required to collect these products without motorized access.

Alternative A does provide the most flexibility for gathering firewood, Christmas trees, and post/poles adjacent to existing roads by allowing vehicles to travel up to 300 feet from an existing road or trail as long as no resource damage occurs. This alternative would also increase the number of hazardous trees that are next to roads that would be removed and increase public safety and ensure routes stay open by reducing buildup of dead and down trees next to the road.

**Alternative B – Direct and Indirect Effects**

Alternative B would be the most restrictive as far as access to harvest forest and woodland products. In areas available for firewood gathering, 198,987 acres (or 28 percent of available areas) would be closed to motorized access limiting the ability of the public to harvest woodland

products in these areas. Vehicles are also only allowed to pull one car length off of designated routes for gathering of woodland products. This would likely lead to a decrease in the distance from roads hazardous trees are collected and restricts the overall acreage easily accessible to collect the resource.

### **Alternative C – Direct and Indirect Effects**

Alternative C is similar to Alternative A with 24,425 acres (or 3 percent) of available areas for firewood gathering closed to motorized access. However, this alternative would only allow vehicles to pull 100 feet off of designated routes (compared to 300 ft in Alternative A) which restricts access to a greater amount of the Planning Area.

### **Alternative D (Preferred Alt) – Direct and Indirect Effects**

In areas available for firewood collection, Alternative D would close 68,293 acres (or 10 percent of available areas) to motorized travel which would essentially remove these areas from woodland/timberland harvest. This alternative also only allows vehicles to pull off designated routes the minimum amount necessary to allow other vehicle to safely pass. This would likely decrease the amount of woodland and timberland products the public would collect since it is assumed the majority of the resource would be collected close to where vehicles can access. This does not preclude areas further from designated routes from gathering woodland and timberland products; however it would be much more labor intensive for the public to do so.

### **Cumulative Effects**

Past and present impacts to woodland and timberland products include industrial development, forest fires, and fuels projects. Industrial development such as well pad development, access routes, pipelines, and compressor facilities often results in the removal of woodland and timberland products. Access routes to oil and gas facilities have the potential add additional access to forest and woodland products; however limiting access routes to oil and gas facilities to administrative use only would not benefit general public access to woodland products.

Wildland fires generally consume large acres of forest and woodland products. Large wildland fires near designated routes and primitive routes have the potential to further limit the ability of the public to gather forest and woodland products. These impacts are generally expected to be minimal based on the number of roads and amount of forest and woodland products in the Planning Area and the public should have adequate access to gather forest and woodland products.

## **6. PUBLIC & COOPERATING AGENCY INVOLVEMENT**

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### **6.1. Public Scoping**

The BLM conducted both internal and external scoping to identify planning issues. The BLM initiated scoping for the Travel Management RMPA by publishing a Notice of Intent (NOI) in the Federal Register and issuing a press release on October 16, 2015. Public meetings were held in Meeker on November 16, 2015 and Rangely on November 18, 2015. The Northwest Resource Advisory Council's (NW RAC) Travel Management Subgroup also held a meeting on November

16, 2015 in Meeker. The BLM provided notice of the Subgroup's meeting in a Federal Register Notice published on October 23, 2015.

The BLM received 119 form letters, 28 unique comment letters from the public (including industry and other organizations), and 5 comment letters from Cooperating Agencies. The planning issues are summarized in the Scoping Report (available online at <https://go.usa.gov/xn6N6>) and were used to help guide development of the preliminary alternatives.

## **6.2. Cooperating Agencies**

In February 2015, the BLM invited other agencies to participate in the planning process as Cooperating Agencies and to attend a two-day training (held in March 2015) with BLM staff on travel management planning. The BLM held a scoping meeting with the Cooperating Agencies on November 17, 2015. Agencies that have signed a Memorandum of Understanding and agreed to participate as Cooperating Agencies include: Towns of Meeker and Rangely; Rio Blanco, Moffat, and Garfield counties; White River and Douglas Creek Conservation Districts; Colorado Parks and Wildlife; and Dinosaur National Monument.

## **6.3. Review of the Preliminary Alternatives**

On August 15, 2016, the BLM made the preliminary alternatives available for public review prior to conducting the impacts analysis in this EA. Public meetings to explain the preliminary alternatives were held in Meeker on August 30, 2016 and in Rangely on August 31, 2016. The BLM also offered public field tours of the proposed open areas (LO7 Hill open area on September 7, 2016 and North Dinosaur, North Rangely, and the Rangely Rock Crawling Park open areas on September 8, 2016).

The BLM considered public comments and either 1) modified Alternative B or C to expand the range of alternatives or 2) identified additional alternatives considered but eliminated from detailed analysis. Appendix D provides a summary of changes to the alternatives based on public input. Non-substantive comments (such as a simple "vote" for a particular alternative) and comments that were outside the scope of the Travel Management RMPA have been documented in this project's decision file but are not summarized in Appendix D.

## **6.4. Public Review of the Preliminary EA and Unsigned FONSI**

Add text after Internal BLM review (based on updated schedule).

## 7. SUPPORTING INFORMATION

### 7.1. Interdisciplinary Review

Table 6. List of Preparers

Name	Title	Area of Responsibility	Date Signed
Keith Sauter	Hydrologist	Surface and Ground Water Quality; Floodplains, Hydrology, and Water Rights; Prime and Unique Farmlands	3/31/2018
Lisa Belmonte	Wildlife Biologist	Special Status Animal Species, Migratory Birds, and Aquatic and Terrestrial Wildlife	3/31/2018
Matt Dupire	Rangeland Management Specialist/Project Lead	Vegetation, Invasive, Non-Native Species, Wild Horses, Livestock Grazing, Soil Resources, Wetlands and Riparian Zones, Hazardous or Solid Wastes, Social and Economic Conditions,	3/31/2018
Matthew Dupire	Ecologist	Special Status Plant Species, Forestry and Woodland Products, Areas of Critical Environmental Concern	2/28/2018
Sarah MacDonald	Archaeologist	Cultural Resources, Paleontological Resources, Native American Religious Concerns	3/29/2018
Aaron Grimes	Outdoor Recreation Planner	Visual Resources, Lands with Wilderness Characteristics, Recreation, Access and Transportation, Wilderness, Scenic Byways	3/28/2018
Paul Daggett	Mining Engineer	Air Quality; Geology and Minerals	3/31/2018
Bob Klages	Fire Management Specialist	Fire Management Specialist	3/31/2018
Stacey Burke	Realty Specialist	Realty Authorizations	3/31/2018
Heather Sauls	Planning & Environmental Coordinator	NEPA Compliance	4/1/2018

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